

Draft
Environmental Assessment
for
Designation of Critical Habitat
for the
Sacramento Mountains Checkerspot
Butterfly

U.S. Department of the Interior
Fish and Wildlife Service
Region 2



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1.0 PURPOSE OF AND NEED FOR ACTION

The U.S. Department of the Interior (USDI), Fish and Wildlife Service (Service) has prepared this Environmental Assessment (EA) to analyze potential effects to physical and biological resources and social and economic conditions that may result from designation of critical habitat for the Sacramento Mountains checkerspot butterfly (*Euphydryas anicia claudcrofti*), a species proposed for listing as endangered under the Endangered Species Act of 1973 (ESA), as amended. This EA will be used by the Service to decide whether or not critical habitat will be designated as proposed, if the proposed action requires refinement, or if further analyses are needed through preparation of an environmental impact statement. If the proposed action is selected as described or with minimal changes and no further environmental analyses are needed, a Finding of No Significant Impact will be prepared.

This EA has been prepared pursuant to the requirements of the National Environmental Policy Act of 1969 (NEPA) as implemented by the Council on Environmental Quality regulations (40 CFR 1500, *et seq.*)¹ and Department of the Interior NEPA procedures.

1.1 Introduction

While species extinction can and does occur naturally, the current rate of extinctions is estimated to be many times greater than the natural "background" rate, due to the effects of

human actions (*e.g.* Wilson, 1992; Ward, 2004). Recognition that human activities "untempered by adequate concern and conservation" were causing species extinctions was the primary reason for enacting the Endangered Species Act of 1973 (*cf.* ESA §2[a][1]). In developing the law, Congress found that the biological diversity and natural heritage of the United States had "esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people" (*cf.* ESA §2[a][3]). The ESA is now the main federal law for protecting and recovering species that are in danger of extinction, thereby conserving the biological diversity and natural heritage of the United States.

The Service has found sufficient evidence to indicate that the Sacramento Mountains checkerspot butterfly (checkerspot) is in danger of extinction due to human activities. Therefore, on 6 September 2001, the Service published a proposed rule to list the checkerspot as endangered under the ESA (66 FR 46575)². The primary reasons for proposed listing were "destruction and modification of habitat from private and commercial development, habitat degradation and loss of host plants from grazing, encroachment of conifers and nonnative vegetation into non-forested openings, over collection, and, due to its limited range, vulnerability to local extirpations from extreme

¹ CFR is the Code of Federal Regulations, which can be accessed via the Internet at <http://www.gpoaccess.gov/cfr/index.html>

² This is a reference to the Federal Register, which is "the official daily publication for rules, proposed rules, and notices of Federal agencies and organizations, as well as executive orders and other presidential documents." Federal Register volumes from 1994 to present can be accessed via the Internet at <http://www.gpoaccess.gov/fr/index.html>

weather events or catastrophic wildfire including fire suppression activities” (66 FR 46575).

This EA analyzes the potential effects of designating critical habitat for the checkerspot. Critical habitat is defined in the ESA as areas that are essential for the conservation³ of the species (see section 1.4.1 below for an in-depth discussion of critical habitat). The Service is required to designate critical habitat, to the maximum extent prudent, at the time a species is listed as threatened or endangered (ESA §4[a][3]; 50 CFR 424.12). Designation of critical habitat is not considered to be prudent when: 1) the species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species; or 2) designation of critical habitat would not be beneficial to the species (40 CFR 424.12[a][1]). The Service has determined that threats to the checkerspot would not increase with critical habitat designation and that designation of critical habitat would have substantial beneficial effects in conservation of the checkerspot (66 FR 46575: 46586)⁴. Information on known locations and distribution of the checkerspot is already publicly available, so threats to the butterfly would not be increased with designation of critical habitat (66 FR 46575: 46586).

³ Conservation is defined in the ESA as the use of “all methods and procedures which are necessary to bring any endangered or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary.”

⁴ Citations in this Environmental Assessment often point to the specific page number of the reference. For example, (66 FR 46575: 46586) refers to page number 46586 of the proposed rule published in the Federal Register. Full citations are provided at the end of the Environmental Assessment in the section titled *References*.

Conservation of the checkerspot would benefit from critical habitat designation (66 FR 46575: 46586). Designation of critical habitat can help focus conservation activities for the butterfly, alert the public and land-management agencies to the importance of specific areas for conservation of the checkerspot, and identify areas that may require special management. Also, critical habitat designation would be beneficial because long-term persistence of the checkerspot is dependant on metapopulation⁵ processes. Maintenance of suitable habitat at occupied and unoccupied sites, as well as connectivity between habitat patches, is essential for persistence of the checkerspot metapopulation (Pittenger and Yori, 2003).

There are only a few historic collection records available for the checkerspot, so sampling data alone do not provide an accurate picture of the historic distribution and abundance of the butterfly. Historically, the checkerspot was likely more abundant within its range because meadow habitat was more abundant and less fragmented (66 FR 46575: 46577). Vegetation changes and land development that have occurred in the Sacramento Mountains since the late 1800s, reveal that meadow habitat required by the checkerspot has become less abundant and more fragmented (66 FR 46575: 46577; Kaufmann *et al.*, 1998). The entire, known distribution of the checkerspot is a relatively small area in south-central Otero County, centered around the Village of Cloudcroft, New Mexico. Within this area, occurrence of the checkerspot is patchy and

⁵ A metapopulation is defined as “a set of local populations that persists in balance between stochastic (random) local extinctions and establishment of new local populations” (Haanski and Kuussaari, 1995). Also see section 1.4.2.5 for a more in-depth discussion of metapopulation structure and the Sacramento Mountains checkerspot butterfly.

restricted to meadow habitats and forest openings above about 8,000 feet elevation (66 FR 46575). The checkerspot has been confirmed to occur at 15 general locations. All of these known locations are on Forest Service-administered lands. The checkerspot is also believed to occur on private lands that are adjacent to Forest Service lands. However, the extent of occurrence of the checkerspot on private or tribal lands is unknown because no surveys have been conducted on private lands or on the Mescalero Apache Reservation at the northern edge of the checkerspot's known distribution.

This EA analyzes alternatives for designation of critical habitat for Sacramento Mountains checkerspot butterfly. The EA is organized in seven chapters. Chapter 1 contains introductory information on critical habitat and the checkerspot, and describes the purpose of and need for the action. Chapter 2 describes the alternatives for critical habitat designation, including the No Action alternative, and provides a summary comparison of the effects of the alternatives. Chapter 3 presents the existing conditions and discloses the effects of the alternatives for critical habitat designation on relevant resource areas. Chapter 4 is the analysis of significance of the proposed action. Chapter 5 is the list of preparers of the EA, Chapter 6 is a list of those receiving the EA, and Chapter 7 is a list of references cited in the EA.

1.2 Purpose of the Action

Preservation of the habitat required by an endangered or threatened species is a crucial component of conservation. A primary purpose of the ESA is to "provide a means whereby the ecosystems upon which endangered species and threatened species may be conserved" (ESA

§2[b]). The critical habitat provisions of the ESA are intended to provide protection of habitat that is essential to the conservation of listed species.

The purpose of this action is to designate critical habitat for Sacramento Mountains checkerspot butterfly, a species proposed for listing as endangered under the ESA. Critical habitat designation identifies geographic areas that are essential for conservation of the checkerspot. It also describes the physical and biological features that constitute critical habitat (*i.e.* primary constituent elements).

1.3 Need for the Action

Habitat protection and management is essential for conservation of Sacramento Mountains checkerspot butterfly. Threats to habitat of the checkerspot were a primary reason for proposing to list the species as endangered (66 FR 46575). The critical habitat provisions of the ESA were intended to address habitat requirements of listed species.

1.4 Background

1.4.1 Critical Habitat

1.4.1.1 Provisions of the ESA Section 4(a)(3) of the ESA states that critical habitat shall be designated to the maximum extent prudent and determinable and that such designation may be revised periodically, as appropriate. Section 4(b)(2) of the ESA requires that critical habitat designation be based on the best scientific information available and that economic and other impacts must be considered. Areas may be excluded from critical habitat designation if it is determined that the benefits of excluding them

outweigh the benefits of their inclusion, unless failure to include the areas in critical habitat would result in extinction of the species.

Critical habitat is defined in section 3(5)(A) of the ESA as:

"(I) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical and biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection;

and

(ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species."

Section 3(5)(C) also states that critical habitat "shall not include the entire geographical area which can be occupied by the threatened or endangered species" except when the Secretary of the Interior determines that the areas are essential for the conservation of the species.

Section 7(a)(2) of the ESA requires federal agencies to consult with the Service to "insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined ... to be critical." Each agency is required to use the best scientific and commercial data available. This consultation process is typically referred to as section 7

consultation. Section 7 of the ESA does not apply to state, local, or private land unless there is a federal nexus (i.e. federal funding, authorization, permitting).

Designation of critical habitat can help focus conservation activities by identifying areas that are essential to the conservation of the species, regardless of whether they are currently occupied by the listed species. Designation of critical habitat also serves to alert the public and land management agencies to the importance of an area for conservation of a listed species. As described above, critical habitat receives protection from destruction or adverse modification through required consultation under section 7 of the ESA. Aside from the requirement to consult with the Service under section 7, the ESA does not impose any restrictions on lands designated as critical habitat.

1.4.1.2 The Section 7 Consultation Process

The section 7 consultation process (Figure 1) begins with a determination of effects on listed species and designated critical habitat by the federal action agency. If the federal action agency determines that there will be no effect on listed species or designated critical habitat, the proposed action is not altered or impacted by ESA considerations. If the federal action agency determines that listed species or designated critical habitat may be affected, then consultation with the Service is initiated.

Once it is determined that the proposed federal action may affect a listed species or critical habitat, the federal action agency and the Service typically enter into informal section 7 consultation. Informal consultation is an optional process for identifying affected species and critical habitat, determining potential effects, and exploring ways to modify the action to remove or

reduce adverse effects to listed species or critical habitat (40 CFR §402.13). The informal section 7 consultation process concludes in one of two ways: 1) the Service concurs in writing that the proposed action is not likely to adversely affect listed species or critical habitat; or 2) adverse impacts are likely to occur and formal consultation is initiated.

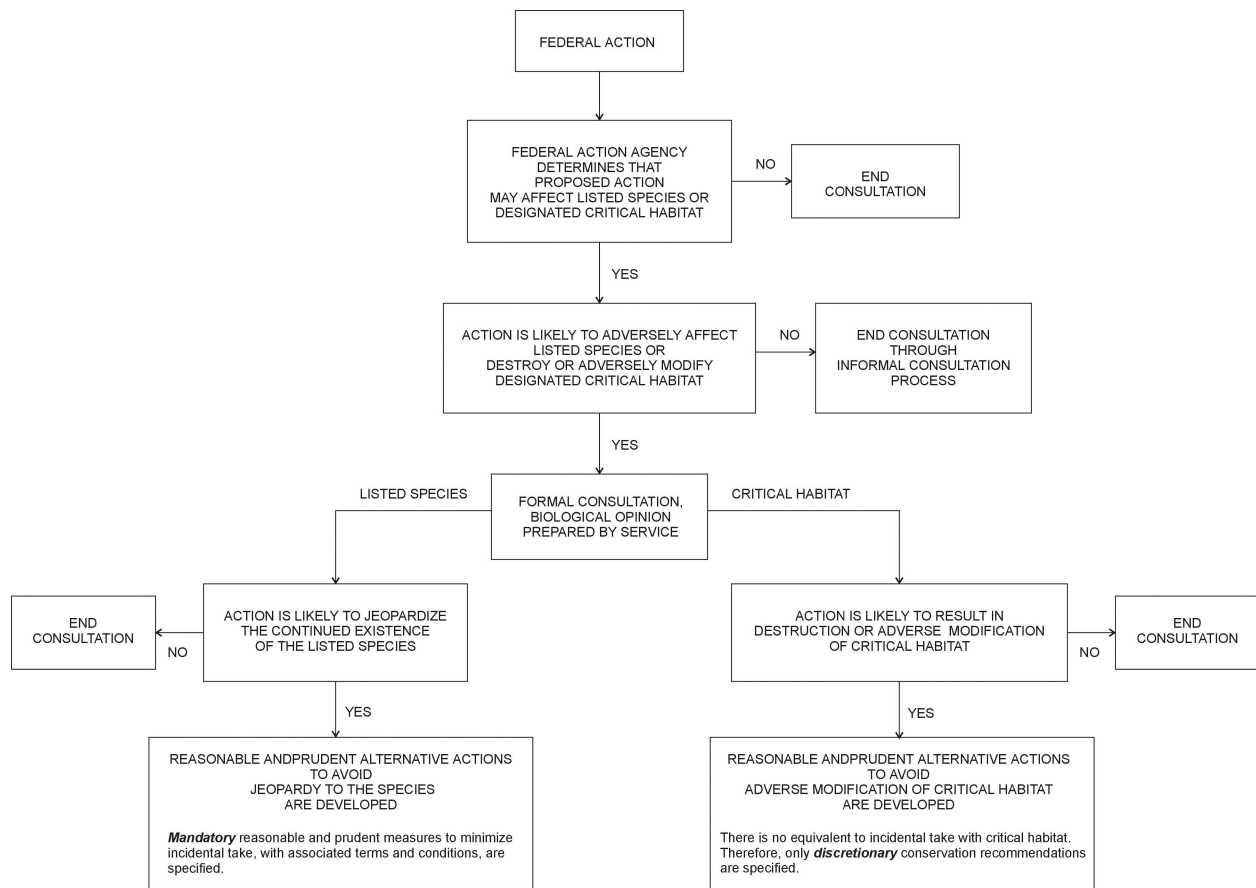
Formal consultation is initiated when it is determined that the proposed federal action is likely to adversely affect a listed species or critical habitat (40 CFR §402.14). Formal consultation concludes with a biological opinion issued by the Service on whether the proposed federal action is likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of critical habitat (40 CFR §402.14[h]). Independent analyses are made under both the jeopardy and the adverse modification standards.

A “non-jeopardy” or “no adverse modification” opinion concludes consultation and the proposed action may proceed under the ESA. The Service may prepare an incidental take statement with reasonable and prudent measures to minimize take, and associated, mandatory terms and conditions that describe the methods for accomplishing the reasonable and prudent measures. Discretionary conservation recommendations may also be included in a biological opinion based on effects to species. Conservation recommendations, whether they relate to the jeopardy or adverse modification standard, are discretionary actions recommended by the Service. These recommendations may address minimizing adverse effects on listed species or critical habitat, identify studies or monitoring, or suggest how action agencies can assist species under their own authorities and section 7(a)(1) of the ESA. There are no ESA

section 9 prohibitions for critical habitat. Therefore, a biological opinion that concludes no destruction or adverse modification of critical habitat may contain conservation recommendations but would not include an incidental take statement, reasonable and prudent measures, or terms and conditions.

In a biological opinion that results in a jeopardy or adverse modification conclusion, the Service develops mandatory reasonable and prudent alternatives to the proposed action. Reasonable and prudent alternatives are actions that the federal agency can take to avoid jeopardizing the continued existence of the species or adversely modifying critical habitat. The Service may develop reasonable and prudent alternatives that vary from slight project modifications to extensive redesign or relocation of the project, depending on the situations involved. Reasonable and prudent alternatives must be consistent with the intended purpose of the proposed action and they also must be consistent with the scope of the federal agency's legal authority. Furthermore, the reasonable and prudent alternatives must be economically and technically feasible. A biological opinion that results in a jeopardy finding, based on effects to the species, may also include an incidental take statement, reasonable and prudent measures, terms and conditions, and conservation recommendations. A biological opinion that results in an adverse modification finding may include reasonable and prudent alternatives and conservation recommendations, but no incidental take statement or associated reasonable and prudent measures and terms and conditions.

Figure 1. Simplified diagram of the ESA section 7 consultation process showing the parallel track for listed species and designated critical habitat. The informal section 7 consultation process leading to a determination of no adverse effect to listed species or designated critical habitat is not portrayed in detail.



1.4.1.3 Proposed Primary Constituent Elements In accordance with section 3(5)(A)(I) of the ESA and regulations at 50 CFR 424.12, the Service is required to consider those physical and biological features, called primary constituent elements, that are essential to conservation of the species. Proposed primary constituent elements essential to the conservation of Sacramento Mountains checkerspot butterfly include those habitat components providing for breeding, ovipositing (*i.e.* egg laying), diapausing, roosting or resting, or foraging areas (66 FR 46575: 46588). Proposed primary constituent elements of critical habitat for the checkerspot are:

- elevation between 8,000 ft and 9,000 ft within the mixed-conifer forest (Lower Canadian Zone) and within an approximate 54 square mile polygon centered around the Village of Cloudcroft, Otero County, New Mexico, and south of the Mescalero Apache Nation boundary;
- drainages, meadows, or grasslands;
- occurrence of known food plants including New Mexico penstemon (*Penstemon neomexicanus*), orange sneezeweed (*Hymenoxys hoopesii*), or tobacco-root (*Valeriana edulis*);
- less than 5% canopy cover;
- plant community with plants such as arrow-leaf groundsel (*Senecio triangularis*), curly-cup gumweed (*Grindelia squarrosa*), figwort (*Scrophularia* sp.), penstemon (*Penstemon* sp.), skyrocket (*Ipomopsis aggregata*), milkweed (*Asclepias* sp.), wild rose (*Rosa woodsii*), or wallflower (*Erysimum capitatum*).

Areas adjacent to or linking areas that have some or all of the above elements and are sufficient to provide for dispersal between areas of butterfly habitat are necessary for conservation of the

species and thus are proposed as critical habitat. Habitat that provides for dispersal may not support all of the other primary constituent elements. Existing man-made structures and other features not containing one or more of the primary constituent elements are not considered critical habitat.

1.4.2 Sacramento Mountains Checkerspot Butterfly

1.4.2.1 Description The Sacramento Mountains checkerspot butterfly (*Euphydryas anicia* [= *chalcidona*] *cloudcrofti*: Nymphalidae) was described to science in 1980 (Ferris and Holland, 1980). Although currently considered a subspecies (Brussard *et al.*, 1989), genetic differentiation of Sacramento Mountains checkerspot may warrant recognition at the species level (G. Pratt, *in litt.*). The Sacramento Mountains checkerspot is a conspicuous, medium-sized butterfly. Forewing costal margin length in males ranges from 0.82 to 0.95 inches and females range from 0.87 to 1.10 inches (Ferris and Holland, 1980: 6), which translates to a wingspan of about 1.6 to 2.2 inches. The butterfly is dark scarlet-orange with black maculation on the dorsal surface of the wings, punctuated by pale spots and wing margins (Figure 2). Males and females are generally similar in appearance (Ferris and Holland, 1980: 5). Larvae are black-and-white banded with orange dorsal bumps and black spines (Figure 3). Checkerspot larvae reach a maximum post-diapause length of about an inch (Pittenger and Yori, 2003: 8).



Figure 2. Sacramento Mountains checkerspot butterfly in Pumphouse Canyon, Otero County, New Mexico, 28 June 2002 (Photo by John Pittenger). The checkerspot is sipping nectar from the flower of orange sneezeweed.



Figure 3. Pre-diapause larvae of Sacramento Mountains checkerspot feeding on a leaf of New Mexico penstemon in La Luz Canyon, 1 October 2002 (Photo courtesy of John Pittenger).

1.4.2.2 Life History Sacramento Mountains checkerspot has a single adult flight from mid- to late June through early August, with peak numbers typically occurring in early to mid-July (66 FR 46575; Ferris and Holland, 1980; Pittenger and Yori, 2003: 44). Female checkerspots lay their eggs on New Mexico penstemon (*Penstemon neomexicanus*). The congregation of young larvae that hatch from the eggs form a silky, webbed tent in the penstemon plant on which they feed. Larvae may also feed on tobacco-root (*Valeriana edulis*). Larvae typically disperse from the tent site and enter diapause⁶ in the fall, when temperatures drop and day-length shortens but before complete senescence of food plants. The larvae molt three or four times before entering diapause. Dispersing larvae may move substantial distances from the tent site, with a maximum recorded distance of 81 feet (Pittenger and Yori, 2003: 8). Larvae find shelter in plant litter, under rocks, or in loose soils associated with gopher mounds during diapause (66 FR 4675; Pittenger and Yori, 2003). Diapause typically ends in the spring, although it is suspected that some larvae may remain in diapause for more than one year, depending on environmental conditions (66 FR 46575; G. Pratt, *in litt.*). Larvae resume feeding and molt three or four more times before pupating in late May to early June (66 FR 46575; Pittenger and Yori, 2003: 11). Adults usually begin emerging in late June. Adult checkerspots typically have a life span of less than 20 days (Pittenger and Yori, 2003: 44).

⁶ Diapause is a prolonged period of dormancy that is entered into before environmental conditions become unfavorable. Diapause is normally ended when the animal is subjected to a period of low temperature, followed by a return of temperatures conducive to growth and development (Borror *et al.*, 1981: 105).

1.4.2.3 Habitat Sacramento Mountains checkerspot butterfly inhabits meadows and forest openings in mixed-conifer forest, generally from about 8,000 feet to 9,000 feet elevation. However, the butterfly has been documented from elevations as low as 7,600 feet in Bailey Canyon (unpublished Forest Service data) to about 9,200 feet elevation at the upper end of Pumphouse Canyon (Pittenger and Yori, 2003). Meadow and forest opening habitats are dominated by herbaceous plants and have little or no overhead tree-canopy cover. Common grasses in habitats occupied by the checkerspot include fescues (*Festuca* spp.), bromes (*Bromus* spp.), Kentucky bluegrass (*Poa pratensis*), mountain muhly (*Muhlenbergia montana*), sleepygrass (*Stipa robusta*), and witchgrass (*Panicum capillare*). Common forbs include New Mexico penstemon, black medic (*Medicago lupulina*), orange sneezeweed, filaree (*Erodium texensis*), spike verbena (*Verbena macdougalii*), Louisiana sage (*Artemisia ludoviciana*), fringed sage (*Artemisia frigida*), skyrocket, sticky aster (*Machaeranthera bigelovii*), mountain parsley (*Pseudocymopterus montanus*), short-rayed coneflower (*Ratibida tagetes*), dandelion (*Taraxacum officinale*), fleabane daisy (*Erigeron divergens*), biennial white ragweed (*Hymenopappus biennis*), yarrow (*Achillea millefolium*), wallflower, and grass-leaved peavine (*Lathyrus graminifolius*). Common shrub species found in habitat of the checkerspot are New Mexico elderberry (*Sambucus nigra cerulea*) and wild rose (J. Pittenger, unpublished data).

Habitat at larval tent sites is characterized by a substantial amount of bare ground, plant litter, and rock cover, with vegetation cover ranging from an average of 60% in pre-diapause larval habitat to 37% in post-diapause larval habitat (Pittenger and Yori, 2003). Forbs usually make up about half of the vegetation cover in the vicinity of larval tent

sites (Pittenger and Yori, 2003: 40). Average density of *Penstemon neomexicanus* in the vicinity of larval tent sites ranges from about 3.5 to 5.3 clumps per square meter (Pittenger and Yori, 2003: 37). Most larval tent sites are in penstemon patches with soils that have been disturbed by pocket gophers (Pittenger and Yori, 2003: 31). New Mexico penstemon grows vigorously in these areas and soil disturbance by pocket gophers appears to be an important process in establishment and growth of the plant (Pittenger and Yori, 2003: 41). Adult checkerspots are most often found nectaring on orange sneezeweed, which is typically the most abundant flowering plant in meadow habitats. Adult checkerspots have also been observed nectaring on spike verbena, cutleaf coneflower (*Rudbeckia laciniata*), New Mexico elderberry, mountain figwort (*Scrophularia montana*), dandelion, yellow salsify (*Tragopogon dubius*), musk thistle (*Carduus nutans*), and short-rayed coneflower (Pittenger and Yori, 2003: 40).

1.4.2.4 Distribution The historic distribution of Sacramento Mountains checkerspot is not well known, due to the scarcity of collection records. The earliest known collections of Sacramento Mountains checkerspot were made in 1902 in the Cloudcroft area (Ferris and Holland, 1980: 7). By the time the subspecies was described in 1980, the range of the butterfly was estimated to encompass only a one to two mile area around the Pines Campground site (Ferris and Holland, 1980: 7). Comprehensive determination of the distribution and range of the butterfly was not made until the late 1990s, when the Forest Service began conducting systematic surveys (66 FR 46575: 46576). These surveys found the checkerspot to be patchily distributed within an area of about 54 square miles (Figure 4). To date, no surveys have been conducted to assess the distribution of the checkerspot on private lands.

1.4.2.5 Population Structure and Abundance

Similar to other butterflies in the genus *Euphydryas*, Sacramento Mountains checkerspot has a metapopulation structure (66 FR 46575: 46576; Erlich and Hanski, 2004; Harrison *et al.*, 1988; Pittenger and Yori, 2003: 39-40; Wahlberg *et al.*, 2002). A metapopulation consists of a group of subpopulations linked together by immigration and emigration (Levins, 1970; Meffe and Carroll, 1994: 188). At any given time, subpopulations inhabit some of the suitable habitat patches while others are unoccupied. A key element in persistence of a metapopulation is the availability of and capacity for colonization of suitable, unoccupied habitat patches. This is because most subpopulations generally do not persist for a long time. The metapopulation survives by individuals immigrating from occupied patches, colonizing unoccupied suitable habitat patches, and establishing new subpopulations. Subpopulations may shift over time among suitable habitat patches in the landscape like checkers on a checkerboard. Some subpopulations may persist for a long period of time. Such subpopulations are referred to as core or mainland subpopulations (Hanski, 1999). The long record of checkerspot occurrence in the Pines Campground area suggests that this colony may constitute a core or mainland subpopulation.

Long-term persistence of the checkerspot metapopulation depends on the abundance, size, and connectivity of suitable habitat patches in the landscape (*cf.* Murphy *et al.*, 1990). Connectivity of habitat patches relates to the dispersal ability of the butterfly (*e.g.* Thomas and Harrison, 1992). Research conducted in 2002 found that adult checkerspots are relatively sedentary, with only a few individuals moving substantial distances from their natal habitat patches (Pittenger and Yori, 2003). Maximum dispersal distance observed in 2002 was a little over 0.5 mile.

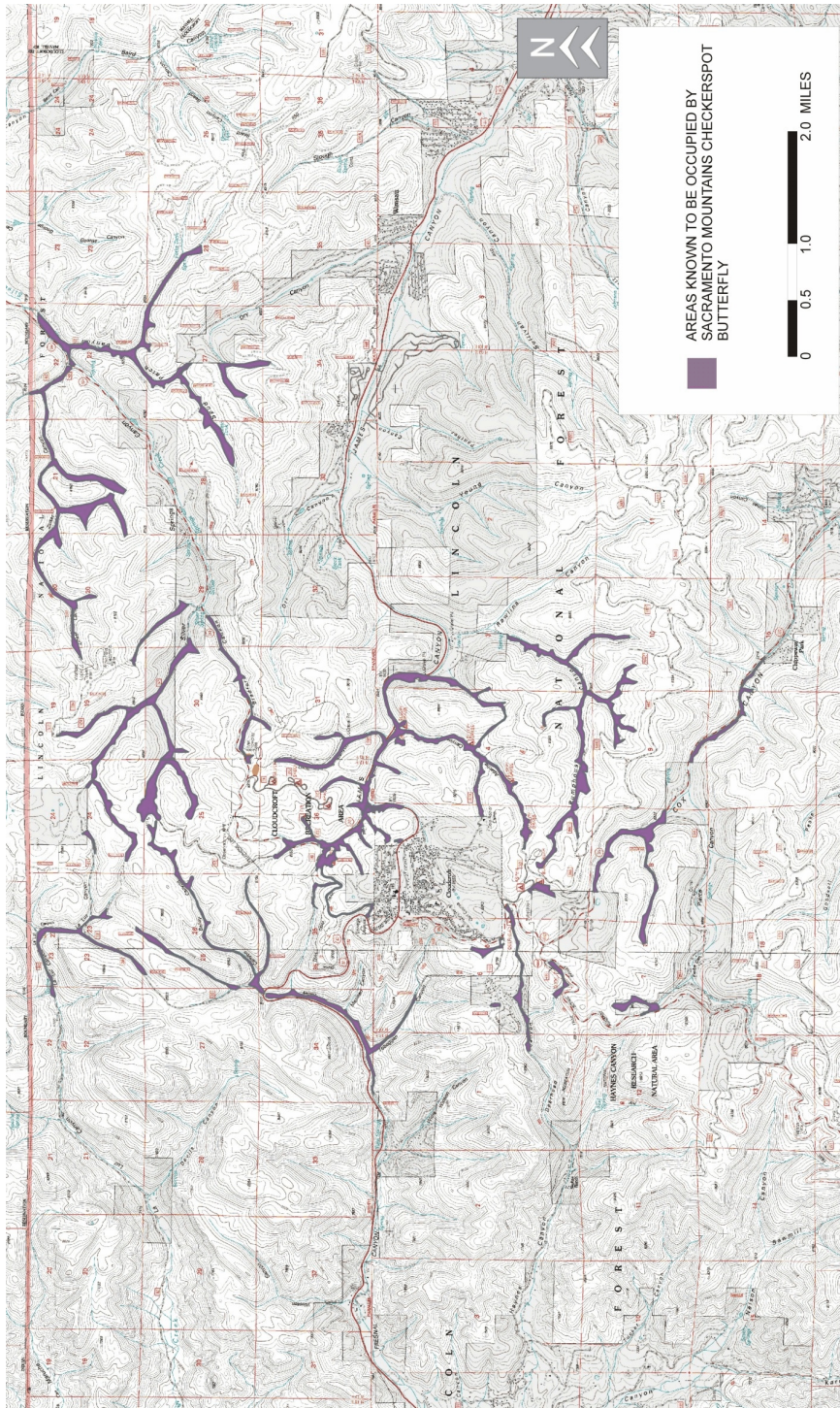


Figure 4. Current known distribution of Sacramento Mountains checkerspot butterfly.

Subpopulations of the checkerspot generally have relatively low population densities. For example, in 2002 there were only an estimated 127 adult checkerspots during the peak of the flight period in a 24.3-acre site in Pumphouse Canyon (5.2 checkerspots per acre). The highest population densities recorded in 2002 were around 40 checkerspots per acre (Pittenger and Yori, 2003). These estimates cannot be simply extrapolated to the entire area of suitable habitat to determine the total number of butterflies at any one time, however, because of the patchy distribution of the checkerspot.

1.5 Permits Required for Implementation

No permits are required for critical habitat designation. Designation of critical habitat occurs through a rule-making process under the Administrative Procedures Act and the ESA.

1.6 Related Laws, Authorizations, and Plans

Related provisions of the ESA require federal agencies to consult with the Service when there are potential effects to endangered or threatened species, independent of critical habitat. The National Forest Management Act of 1976 addresses various aspects of conservation of fish and wildlife and their habitat, which applies to Sacramento Mountains checkerspot butterfly. The Village of Cloudcroft enacted a local zoning ordinance to protect future annexed property as green belt or open space, which may benefit the checkerspot (Chapter 7 of the Village Code - Greenbelt Zones Use Regulations G-1 Zone).

1.7 Issues

The following issues associated with designation of critical habitat were identified in written and recorded oral comments received during the public comment period on the September 2001 proposed rule to list the checkerspot, with critical habitat (66 FR 46575).

- Substantial adverse economic and social impacts in the Cloudcroft area and in Otero County may result.
- There may be substantial cumulative impacts in the project area when added to impacts caused by listing of other species, such as the Mexican spotted owl.
- There may be adverse impacts on the tourist industry in the Cloudcroft area.
- An increase in catastrophic forest fires in the project area may result.
- Critical habitat designation for the checkerspot may limit or severely affect access to public and private lands in the project area.
- Critical habitat designation for the checkerspot may limit or severely affect livestock grazing, recreation, and logging practices on Lincoln National Forest lands in the project area.

2.0 ALTERNATIVES, INCLUDING THE NO ACTION ALTERNATIVE

2.1 Development of Alternatives

Identification of areas essential for the conservation of Sacramento Mountains checkerspot is the cornerstone of critical habitat designation. The Service made an assessment of areas needed for the conservation of the checkerspot based on the best scientific and commercial information available concerning the present and historic range of the species, its habitat and biology, and threats to the butterfly (66 FR 46575: 46587). This assessment and issues identified during comment on the proposed rule served as the basis for developing critical habitat designation alternatives.

2.2 No Action Alternative

The No Action alternative is defined as no designation of critical habitat for Sacramento Mountains checkerspot butterfly. Analysis of the No Action alternative is required by NEPA, and it serves as a baseline for analyzing effects of action alternatives. However, it is not clear that the Service could, under the law, adopt the No Action alternative.

2.3 Alternative I

Alternative I includes all lands that have proposed primary constituent elements that are within an approximately 54-square mile area centered around the Village of Cloudcroft and south of the Mescalero Apache Nation boundary in south-

central Otero County, New Mexico, as described in the 6 September 2001 proposed rule (Figure 5; 66 FR 46575: 46587). Only those lands within this area that contain the proposed primary constituent elements would be designated as critical habitat.

Survival and recovery of the checkerspot depend upon restoration and maintenance of a network of connected patches of suitable habitat. Protection and enhancement of the existing subpopulations, as well as reestablishment of subpopulations in suitable areas within the known range of the butterfly, are necessary for its survival and recovery. One of the most important goals for recovery of the checkerspot will be establishment of secure, self-reproducing subpopulations in areas where the butterfly is no longer found and may have been extirpated. Because the checkerspot occurs as a metapopulation, suitable habitat areas that may or may not be used by the butterflies every year are essential for the conservation of the species and are proposed as critical habitat.

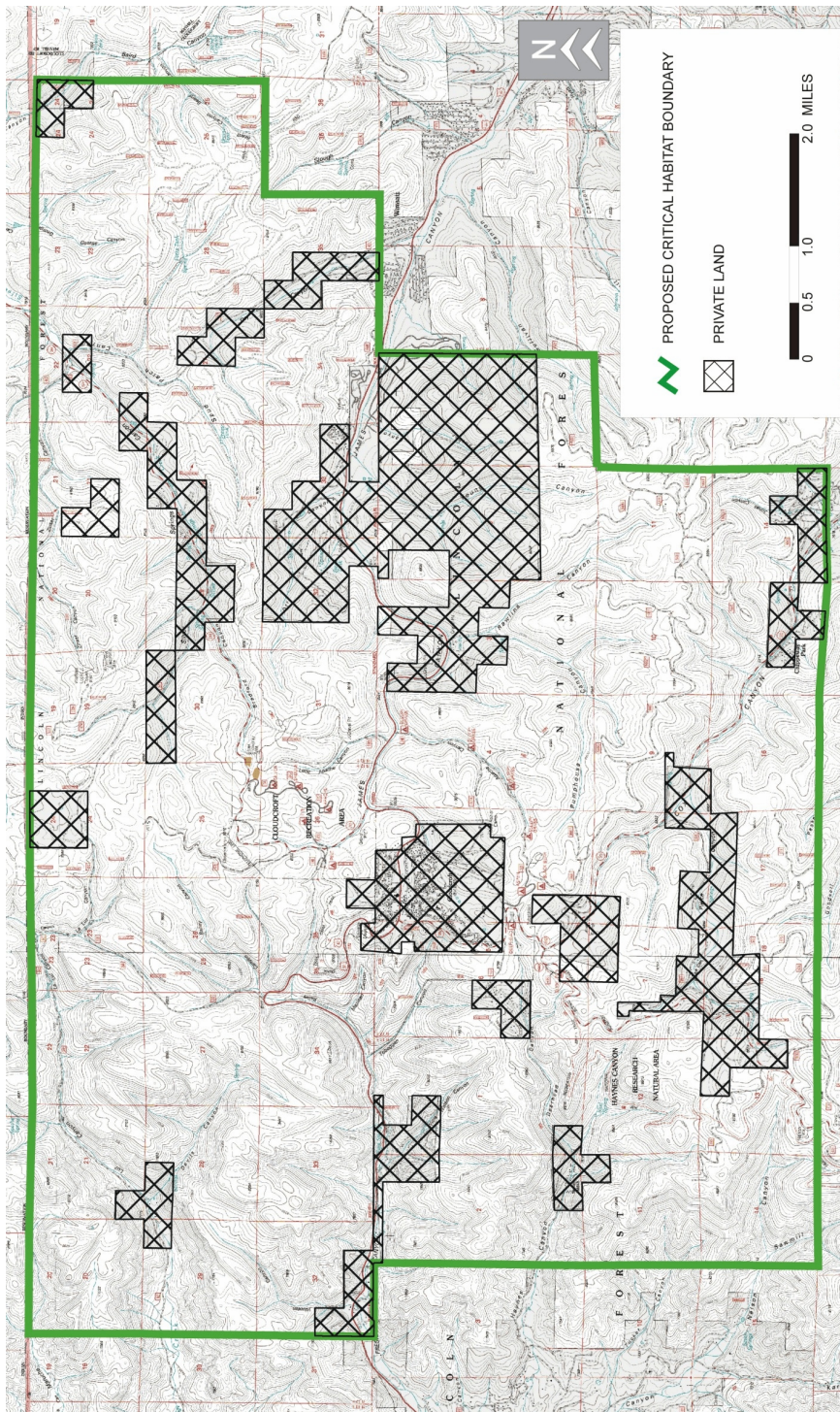


Figure 5. Proposed critical habitat for the Sacramento Mountains checkerspot. The green line shows the boundary limits of proposed critical habitat for both alternatives I and II. Private lands are indicated by cross-hatching.

Alternative I would include all lands with proposed primary constituent elements that are within the boundary.

Alternative II would exclude all private lands within the boundary from critical habitat designation.

The boundary area for Alternative I includes approximately 34,560 acres of land, of which about 5,198 acres are estimated to have proposed primary constituent elements, based on a Forest Service model (66 FR 46575: 46576). The estimated 5,198 acres of land that may have primary constituent elements includes about 2,553 acres of private lands and 2,645 acres of public land administered by the Lincoln National Forest.

Existing features and structures within the proposed critical habitat boundary such as buildings, roads, cultivated agricultural land, residential landscaping (*e.g.* mowed nonnative ornamental grasses), ponds, wetlands, and forests do not contain and are not likely to develop some or all of the proposed primary constituent elements. Therefore, the areas are not included in the proposed critical habitat designation.

2.4 Alternative II

Alternative II is identical to Alternative I except all private lands would be excluded from critical habitat designation (Figure 5). The Service may exclude areas that from critical habitat designation if it is determined that the benefits of such exclusion would outweigh the benefits if including those areas, unless exclusion would result in extinction of the species concerned (ESA §4[b][2]).

Alternative II would exclude from critical habitat designation all private lands within the approximately 54-square mile critical habitat boundary. Only those Forest Service lands within the boundary that have proposed primary constituent elements would be designated as critical habitat. The benefits of excluding private lands from critical habitat designation may include: 1) fostering and maintaining cooperative

working relationships with private landowners in conservation of the checkerspot; 2) facilitating collaboration with private landowners in conservation of the checkerspot; and 3) providing conservation benefits to the checkerspot and its habitat that might not otherwise occur. These benefits of excluding private lands may outweigh the benefits of inclusion. The primary benefit of including private land is the requirement for section 7 consultation on effects to critical habitat when there is a federal nexus (*i.e.* a federal action such as funding or permitting of an activity on private land).

2.5 Comparison of Alternatives

The following table summarizes the potential effects or characteristics of the alternative critical habitat designations on the environment. Potential effects on resources are summarized from the analyses presented in Chapter 3.

Table 1. Comparison of potential effects of alternative critical habitat designations, as compared to existing conditions, by resource category.

| Resource Category | No Action Alternative | Alternative I | Alternative II |
|--|---|---|---|
| Conservation of Sacramento Mountains Checkerspot Butterfly | <ul style="list-style-type: none"> - No §7 consultation on potential effects to critical habitat - No capability through section 7 consultation to track changes in landscape structure relative to threshold required for persistence of checkerspot - No educational benefit from critical habitat designation | <ul style="list-style-type: none"> - Consultation on effects to unoccupied suitable habitat within designated critical habitat - Highest capability through section 7 consultation to track changes in landscape structure relative to threshold required for persistence of checkerspot - Highest educational benefit from critical habitat designation | <ul style="list-style-type: none"> - Consultation on effects to unoccupied suitable habitat within designated critical habitat - Moderate capability through section 7 consultation to track changes in landscape structure relative to threshold required for persistence of checkerspot - Moderate educational benefit from critical habitat designation |
| Vegetation and Fire Management | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under the jeopardy standard would be required - Reasonable and prudent measures with accompanying terms and conditions for minimizing take may be specified; these are unlikely to result in substantial modifications of proposed vegetation and fire management projects | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - Potential for additional discretionary, minor modifications to some projects to minimize effects to proposed primary constituent elements - Potential for projects to result in adverse modification or destruction of critical habitat is low | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - Potential for additional discretionary, minor modifications to some projects to minimize effects to proposed primary constituent elements - Potential for projects to result in adverse modification or destruction of critical habitat is low |
| Livestock Grazing | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under the jeopardy standard would be required - Reasonable and prudent measures with accompanying terms and conditions for minimizing take may be specified; these may result in modifications of livestock grazing in specific areas occupied by the checkerspot, such as altering livestock use periods and levels, rotation among pastures or divisions, and creation of new pastures, exclosures, or allotment divisions | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - Low to moderate levels of grazing are likely to be compatible with conservation of the checkerspot - Consultations under the adverse modification standard are likely to result in discretionary conservation recommendations in most cases; the probability for a grazing action proposed by the Forest Service to result in a determination of adverse modification or destruction of designated critical habitat is low | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - Low to moderate levels of grazing are likely to be compatible with conservation of the checkerspot - Consultations under the adverse modification standard are likely to result in discretionary conservation recommendations in most cases; the probability for a grazing action proposed by the Forest Service to result in a determination of adverse modification or destruction of designated critical habitat is low |

Table 1, continued

| Resource Category | No Action Alternative | Alternative I | Alternative II |
|------------------------|---|--|--|
| Recreation | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under the jeopardy standard would be required - Reasonable and prudent measures with accompanying terms and conditions for minimizing take may be specified for projects that affect occupied checkerspot habitat including surveying for and relocating checkerspot individuals in proposed impact areas, monitoring, reporting, locating staging areas in unsuitable habitat, relocation of trail segments, off-road vehicle management, and moving recreation events to alternate locations | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - §7 consultation on effects to critical habitat likely to result only in discretionary conservation recommendations, as an adverse modification determination on a recreation project is unlikely to occur | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - §7 consultation on effects to critical habitat likely to result only in discretionary conservation recommendations, as an adverse modification determination on a recreation project is unlikely to occur |
| Federal Land Transfers | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under the jeopardy standard would be required - Reasonable and prudent measures with accompanying terms and conditions for minimizing take may be specified; these may result in modifications of land transfer projects involving areas occupied by the checkerspot, such as deletion of lands that contain occupied checkerspot habitat - Land transfers developed for conservation of the checkerspot would not be affected by section 7 consultation under the jeopardy standard. | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - An adverse modification determination could result if a proposal involves transfer of a large amount of suitable checkerspot habitat for development; however, such a land transfer proposal is very unlikely - Other land transfer proposals would not be affected by critical habitat designation, but section 7 consultation under the adverse modification standard may result in specification of discretionary conservation recommendations | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - An adverse modification determination could result if a proposal involves transfer of a large amount of suitable checkerspot habitat for development; however, such a land transfer proposal is very unlikely - Other land transfer proposals would not be affected by critical habitat designation, but section 7 consultation under the adverse modification standard may result in specification of discretionary conservation recommendations |

Table 1, continued

| Resource Category | No Action Alternative | Alternative I | Alternative II |
|--|---|---|---|
| Socioeconomic Conditions and Environmental Justice | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under the jeopardy standard would be required - Actions on private lands that have the potential to result in take of the butterfly would be subject to section 10 of the ESA, which requires development of a Habitat Conservation Plan as part of an application to the Service for an incidental take permit - Activities that would be most affected economically would include Otero County Electric Cooperative utility line and road maintenance projects, Natural Resources Conservation Service Environmental Quality Incentives Program projects on private lands, and private right-of-way road projects - About 33 percent of the estimated costs of checkerspot conservation are expected to occur on private lands from consultations on Natural Resources Conservation Service projects on private lands and butterfly survey and Habitat Conservation Plan work related to residential and commercial developments | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - Designation of critical habitat may result in additional economic impacts resulting from additional administrative requirements to address critical habitat during section 7 consultations - Designation of critical habitat would have an effect on private lands when a federal action is involved - Critical habitat designation may result in some additional considerations or recommendations during Habitat Conservation Plan development for actions on private lands that involve incidental take of the checkerspot. - Social conditions related to use of the land are unlikely to change with critical habitat designation | <ul style="list-style-type: none"> - §7 consultation on effects to the checkerspot under both the jeopardy and adverse modification/destruction of critical habitat standards would be required - Designation of critical habitat may result in additional economic impacts resulting from additional administrative requirements to address critical habitat during section 7 consultations - Designation of critical habitat would have an effect on private lands when a federal action is involved - Critical habitat designation may result in some additional considerations or recommendations during Habitat Conservation Plan development for actions on private lands that involve incidental take of the checkerspot. - Social conditions related to use of the land are unlikely to change with critical habitat designation |

3.0 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

This chapter describes aspects of the environment that may potentially be impacted by designating critical habitat for the Sacramento Mountains checkerspot butterfly. Potential effects of critical habitat designation under each alternative are then described for the various resource categories. Resource categories addressed in the analysis were selected based on issues identified during the public comment period (*cf.* section 1.7) and checkerspot conservation considerations.

3.1 Assessment of Impacts

3.1.1 Nature of Impacts from Critical Habitat Designation

Impacts on the environment from designation of critical habitat stem from the section 7 consultation requirements of the ESA (*cf.* section 1.4.1.2). Under section 7(a)(2) of the ESA, federal agencies are required to consult with the Service on actions that they fund, implement, or authorize, which may affect listed species or critical habitat (40 CFR §402). The purpose of section 7 consultation, with respect to critical habitat, is to ensure that the actions of federal agencies do not adversely modify critical habitat. Critical habitat is defined as habitat that is essential for the conservation of a listed species.

Critical habitat designation does not have any impact on the environment other than through the section 7 consultation process. Critical habitat designation alone does not establish blanket rules or restrictions on land use, nor does it automatically prohibit or modify any activity.

Each proposed federal action that may potentially affect designated critical habitat is analyzed individually during the section 7 consultation process. Individuals, organizations, states, local governments, and other non-federal entities are potentially affected by the designation of critical habitat only if their actions occur on federal lands, require a federal permit, license, or other authorization, or involve federal funding.

Adverse effects on primary constituent elements or segments of critical habitat generally do not result in an adverse modification determination unless that loss, when added to the environmental baseline, is likely to appreciably diminish the capability of the critical habitat designation to satisfy essential requirements of the species. In other words, activities that may destroy or adversely modify critical habitat include those that alter the primary constituent elements to an extent that the value of critical habitat for conservation of the species is appreciably reduced. Actions that would be expected to both jeopardize the continued existence of Sacramento Mountains checkerspot and destroy or adversely modify its critical habitat would include those that significantly and detrimentally alter its habitat over an area large enough that the likelihood of its survival or recovery is appreciably reduced. The likelihood of an adverse modification or jeopardy determination would depend on the baseline condition of the critical habitat.

Actions not likely to destroy or adversely modify critical habitat include federal activities that are implemented in accordance with a biological opinion issued from the Service (*e.g.* grazing

management, non-forested area management, land development, recreational trail or forest road development or use, road construction or maintenance, prescribed burns, timber harvest, pesticide or herbicide application, utility corridor construction or maintenance). Also, dispersed, low-impact, infrequent human activities on foot or horseback are unlikely to destroy or adversely modify critical habitat (*e.g.* bird watching, sightseeing, backpacking, hunting, photography, camping, hiking).

Some activities may be considered to be of benefit to Sacramento Mountains checkerspot and, therefore, would not be expected to adversely modify critical habitat when carefully planned. Examples of activities, when carefully planned, that could benefit critical habitat by creating and maintaining forest openings may include timber harvest, thinning, prescribed burning, and reducing conifer encroachment in meadows.

3.1.2 Impact Assessment Method

Many projects analyzed in the context of NEPA involve a specific action with well-defined parameters, such as a proposed fuel reduction project that would remove trees within a certain size range at a known location and conduct prescribed burning inside a defined boundary. In contrast, critical habitat designation is a complex action. The consequences of section 7 consultation on potential effects to Sacramento Mountains checkerspot and critical habitat may be highly variable, depending on the characteristics, context, location, duration, geographic extent, and timing of each proposed action subject to consultation. This complexity is heightened by the dynamic nature of the natural environment. Biological conditions that influence the magnitude of potential impacts may change over time and

from place to place. The complexity of the effects of critical habitat designation was addressed by using past section 7 conferences⁷ and interviews with Service biologists on potential future consultation issues as a basis for the impact assessment. A separate analysis of the economic impacts of all conservation activities for Sacramento Mountains checkerspot was conducted and relevant results were incorporated into this EA (Industrial Economics, Inc., 2004).

The proposed action analyzed in this EA is designation of critical habitat. Therefore, the No Action alternative was defined as listing of the checkerspot as endangered, but without designation of critical habitat. Listing of the butterfly and designation of critical habitat are associated actions. It is possible that the butterfly could be listed without critical habitat. However, the opposite is not possible: critical habitat cannot be designated unless the species is listed.

3.2 Conservation of Sacramento Mountains Checkerspot

3.2.1 Existing Conditions

As described above in section 3.1.2, existing conditions are defined as listing of the Sacramento Mountains checkerspot as endangered without critical habitat designation. Under these conditions, consultation with the Service would be

⁷ "Conferencing" is defined in section 7(a)(4) of the ESA as a process for identifying and resolving potential conflicts between proposed federal actions and proposed species or proposed critical habitat. The process is identical to consultation and, upon listing of a proposed species, conference opinions are adopted as biological opinions.

triggered when a proposed federal action is likely to affect the species (*i.e.* when an action is proposed in an area where the butterfly is known to occur). Federal actions proposed in areas not currently occupied by the checkerspot generally would not trigger consultation.

Federal agencies make the initial determination of whether or not their action will affect Sacramento Mountains checkerspot butterfly. If the action agency determines that there will be no effect, they are not required to consult with the Service. Section 7 consultation is triggered when a proposed federal action has the potential to affect Sacramento Mountains checkerspot butterfly or its habitat. The species receives protection from unauthorized take, which is defined to include not only physical harm to individuals but also significant habitat modification or degradation that results in impairment of behavioral patterns such as breeding, feeding, or sheltering.

Geographic analysis conducted by the Forest Service indicates that there is about 5,198 acres of habitat suitable for Sacramento Mountains checkerspot butterfly in the project area (66 FR 46575: 46576). This estimates consists of about 2,553 acres of private lands (49 percent) and 2,645 acres of public land administered by the Lincoln National Forest (51 percent). The butterfly is known to occur in about 15 different localities within the project area. The extent of its occurrence on private lands is unknown.

Since the checkerspot was proposed for listing on 6 September 2001, there have been about 15 conferences between the Lincoln National Forest and the Service on projects potentially affecting the checkerspot. Five of these conferences were formal, involving incidental take of Sacramento Mountains checkerspot butterfly. Combined incidental take from these five projects was about

41 acres of occupied habitat with an unknown number of individuals. Two of the formal conferences were on study proposals, which together involved take of 150 individuals. Conferencing on federal actions that do not jeopardize the checkerspot or destroy or adversely modify proposed critical habitat may result in conservation recommendations or suggested discretionary measures to minimize take.

Some voluntary actions have been implemented for conservation of the checkerspot and its habitat including prohibiting collection of butterflies on Forest Service lands, conducting studies to determine its distribution and obtain more information about its ecology, altering proposed development and land transfer projects to protect the butterfly and its habitat, enacting a local greenbelt ordinance to protect open space and habitat of the butterfly, and initiating development of a cooperative conservation strategy for the checkerspot. Additionally, the Forest Service has voluntarily included conservation measures for the checkerspot and its habitat as components of several projects. These measures were developed to minimize or avoid adverse impacts to the checkerspot.

The Forest Service evaluates the effects of land management activities on the Sacramento Mountains checkerspot pursuant to the requirements of the National Forest Management Act. The National Forest Management Act of October 22, 1976, as implemented by regulations at 36 CFR 219.19, directs the Forest Service to manage habitat to maintain viable populations of management indicator species, where a viable population is defined as “one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence” (36 CFR 219.19). Land management alternatives are required to be evaluated “in terms

of both amount and quality of habitat and of ... population trends of the management indicator species” (36 CFR 219.19[a][2]). The Forest Service is directed to establish the relationship between population changes of management indicator species and changes in habitat, to the extent practicable, in cooperation with the State fish and wildlife management agency and other federal agencies (36 CFR 219.19[a][6]).

3.2.2 Effects on Sacramento Mountains Checkerspot

3.2.2.1 No Action Alternative No section 7 consultations pursuant to the critical habitat provisions of the ESA would be conducted. In a practical sense, this would mean that no section 7 consultations would be triggered by federal actions proposed in habitats that have proposed primary constituent elements and that are within the proposed critical habitat designation boundary.

A network of suitable habitat patches is necessary for long-term conservation of butterflies that have a metapopulation structure (*e.g.* Gall, 1984; Hill *et al.*, 1996; Murphy *et al.*, 1990; Neve *et al.*, 1996). The absence of a section 7 consultation trigger for actions in unoccupied suitable habitat may limit the ability of the Service to ensure that conservation of the checkerspot is being adequately implemented. Attention generally would be focused on occupied habitat in section 7 consultations. There would be no tracking of changes in landscape structure relative to the threshold required for persistence of the checkerspot (*cf.* Erlich and Hanski, 2004).

The educational aspect and value of critical habitat designation would also not be realized. Critical habitat designation focuses attention to

and awareness of specific geographic areas that are essential to conservation of the species. When a federal agency proposes an action and can see that the action is located within the boundaries of a critical habitat unit, they can plan their projects in a proactive fashion consistent with section 7(a)(1) of the ESA.

3.2.2.2 Alternatives I and II Critical habitat designation under alternatives I or II would have the effect of requiring section 7 consultation when proposed actions may affect primary constituent elements within critical habitat. Section 7 consultation on potential effects to primary constituent elements on private lands would only occur when a federal action is involved.

The spatial configuration of suitable habitat patches (both occupied and unoccupied by the checkerspot) and their habitat quality are critical factors influencing the probability of the checkerspot persisting or going extinct (Erlich and Hanski, 2004). Critical habitat designation would contribute substantially to assessing landscape structure relative to the threshold required for persistence of the checkerspot. Such an assessment of changes in both occupied and unoccupied habitat patches is critical for conservation of the butterfly. The benefit to conservation of the checkerspot would be highest with the most comprehensive designation (Alternative I). Alternative II would have an intermediate benefit to the species, in that all critical habitat units would be tracked with the exception of areas on private lands.

Critical habitat designation would have an educational aspect that would benefit conservation of Sacramento Mountains checkerspot. The educational value of critical habitat designation arises from the geographic description of areas that are essential for

conservation of the species. The more comprehensive the delineation of critical habitat is, the more educational value it has. Therefore, Alternative I would have the highest educational benefit, followed by Alternative II.

3.3 Vegetation and Fire Management

3.3.1 Existing Conditions

The proposed critical habitat designation project area encompasses portions of forest management areas 2A - La Luz, 2F - Mountain Park, 2G - Silver Spring, and 2H - Upper James (Forest Service, 1986). Fire management objectives within these areas are to immediately suppress fires that pose a threat to life or property in developed areas with the option to manage fires in undeveloped areas as prescribed fire under certain conditions. Management direction for these areas also includes prescribed burning using planned ignitions to reduce fuel loads.

Vegetation management activities in the project area consist primarily of thinning treatments to reduce fire fuels loads and restore forest structure to a more natural state. About 89 percent of the lands within the proposed critical habitat boundary (30,687 of 43,560 acres) are classified as by the Forest Service as wildland-urban interface (WUI) treatment areas (Figure 6). Most of this acreage consists of the Peñasco-La Luz WUI area (23,046 acres, or 75 percent). Private lands compose another 24 percent (7,212 acres) of the total WUI area. A small portion of the Elk WUI area is located in the northeast corner of the proposed critical habitat boundary. This portion of the Elk WUI area makes up about one percent

of the total WUI acreage in the project area (428 acres).

Vegetation treatments in the WUI area may include stand thinning, commercial timber harvest, and other fuel reduction treatments. Two commercial sawmills operate in the vicinity of the project area: Dees Sawmill and the Chippaway Mill, both in the Weed-Sacramento area south of the proposed critical habitat designation. The combined capacity of these two sawmills is about 1.1 million board feet per year (Industrial Economics, 2004: 3-4). Commercial timber harvest on the Lincoln National Forest is currently about 2.3 million board feet per year (Industrial Economics, 2004: 3-5).

There have been two conferences on vegetation and fire management projects involving effects to Sacramento Mountains checkerspot butterfly. Informal conferencing on the Rio Peñasco Wildland Urban Interface Project was completed on 16 January 2002 (consultation number 2-22-02-I-128). The Service concurred with the Forest Service's determination that the proposed project may affect, but was not likely to affect the checkerspot or its proposed critical habitat. The reasons for concurrence were that no checkerspots were found in the project area, meadow areas would not be affected, and food plants for the checkerspot were lacking. Checkerspot conservation issues had no effect on this vegetation management project.

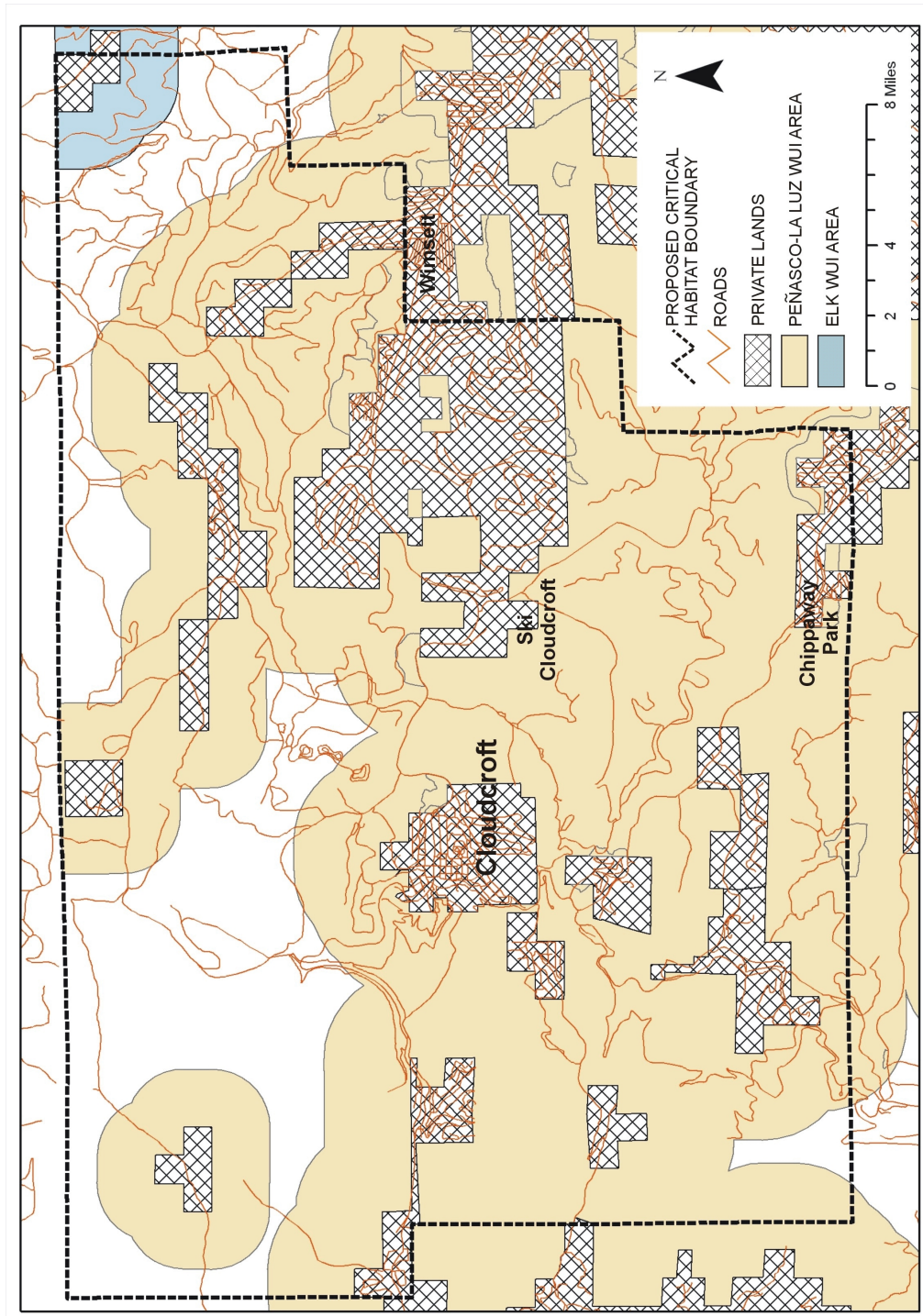


Figure 6. WUI areas within the proposed critical habitat boundary.

Formal conferencing was completed on the Peñasco II Vegetation Management Project on 27 September 2002 (consultation number 2-22-02-F-397). The proposed project involved thinning on 28,804 acres to reduce fire fuel loads, reduce overly dense forest stands, and reduce the risk of catastrophic wildfire in both human and threatened and endangered species habitats (Forest Service, 2002). The project area included 852 acres of proposed critical habitat containing proposed primary constituent elements for the checkerspot (*i.e.* meadow areas with checkerspot food plants). About 502 of the 852 acres were occupied by checkerspots. Tree thinning itself was determined to have no effect on the butterfly because the checkerspot does not occur in forested habitats. However, road construction and maintenance associated with the tree thinning operation was determined to potentially impact 36.4 acres of occupied habitat and another 5.9 acres of unoccupied critical habitat.

Two reasonable and prudent measures to minimize take of checkerspots from the project were specified by the Service, with five associated terms and conditions. These terms and conditions were for the Forest Service to:

- ensure that a Contract Officer's Representative is designated, who would be responsible for overseeing compliance with the protective measures outlined in the terms and conditions;
- monitor the project to ensure compliance with applicable requirements and ensure that the project is implemented consistent with the terms and conditions and conservation measures;

- provide a report documenting how the project is in compliance with the reasonable and prudent measures and the terms and conditions;
- locate and clearly delineate staging areas in places that do not contain New Mexico penstemon, valerian, or orange sneezeweed, or any life stages of the checkerspot butterfly if the project is conducted during the active season of the checkerspot butterfly (*i.e.* March through October); and
- ensure that the habitat that is proposed to be revegetated remains free of nonnative weeds such as Russian knapweed, musk thistle, oatgrass, and teasel.

3.3.2 Effects on Vegetation and Fire Management

3.3.2.1 No Action Alternative Listing of the checkerspot as endangered without critical habitat would be unlikely to have substantial effects on the design or implementation of typical vegetation and fire management actions in the project area. This is because the checkerspot occurs in non-forested habitats, while the majority of vegetation and fire management actions take place in forested habitats. Additionally, vegetation and fire management activities planned and implemented by the Forest Service have been directed at restoring more natural forest structure and maintaining meadow habitats, which also benefits the checkerspot.

Impacts to occupied habitat would likely be subject to mandatory reasonable and prudent measures and associated terms and conditions similar to those described above for the formal

conference on the Peñasco II Vegetation Management Project. Section 7 consultation would not address potential impacts to unoccupied, suitable habitat because there would be no critical habitat designation.

3.3.2.2 Alternatives I and II Designation of critical habitat would require consideration of effects on proposed primary constituent elements during section 7 consultation on federal actions proposed in the designated critical habitat area. Consultation on effects to critical habitat would result only in discretionary conservation recommendations in all cases except when adverse modification or destruction of critical habitat was expected. The critical habitat provisions of section 7 consultation would apply to private lands under Alternative I only when a federal action is involved, such as permitting, funding, or implementation.

Vegetation or fire management activities in the proposed critical habitat designation under alternatives I or II are unlikely to reach the adverse modification or destruction thresholds. Vegetation and fire management activities in the project area take place almost entirely within forested habitats. It is highly unlikely that any vegetation or fire management actions would impact meadow habitat to the extent that adverse modification or destruction thresholds would be reached.

3.4 Livestock Grazing

3.4.1 Existing Conditions

The proposed critical habitat boundary includes portions of six livestock grazing allotments: La Luz Watershed; Sacramento; Russia Canyon; Pumphouse; James Canyon; and Walker C.C.

(Figure 7). Two Forest Service horse pasture are also included within the proposed critical habitat boundary: Heliport and Pines. These grazing allotments cover about 27,300 acres of Forest Service lands within the proposed critical habitat boundary.

The La Luz Watershed allotment is closed and is not grazed by livestock. This allotment covers 5,086 acres. No livestock grazing occurs in the portion of the Sacramento allotment in the project area. The Heliport Horse Pasture (446 acres) is not used. The Pines Horse Pasture (57 acres) is reserved for Forest Service administrative use. It is stocked with up to four horses for about five months out of the year. The Pumphouse allotment currently is stocked with up to 66 cattle and the Russia Canyon allotment is stocked with up to 42 cattle. Both allotments are grazed for about six months out of the year, from around mid-May to mid-October (R. Newmon, Sacramento Ranger District, pers. comm., 21 April 2004).

The grazing permit for the James Canyon allotment (10,623 acres) was cancelled in the early 1990s. Prior to that time, the allotment was stocked with about 142 cattle for six months out of the year. The Forest Service is currently considering resumption of livestock grazing in this allotment. The proposed stocking level would be about 140 cattle for several months during the grazing season (*ca.* mid-May through mid-October). The allotment would be divided into three divisions. The middle division would include the Silver Springs Canyon area and would not be grazed (R. Newmon, Sacramento Ranger District, pers. comm., 21 April 2004).

Currently, the allowable forage utilization level in livestock grazing allotments is 35 percent with a minimum stubble height of four inches (R. Newmon, Sacramento Ranger District, pers.

comm., 21 April 2004). The 1996 amendment to forest plans in Region 3 specified new standards and guidelines for grazing management. The grazing management standard specified that forage use “by grazing ungulates will be maintained at or above a condition which assures recovery and continued existence of threatened and endangered species” (Forest Service, 1996: 94). The guidelines specified that site-specific forage use levels should be developed in consultation with the Service.

However, recommended levels were provided in the plan amendment in the event that site-specific information was not available (Table 2). The Lincoln National Forest Plan also specifies a maximum forage utilization level of 40 percent in riparian areas (Forest Service, 1986: 35). There have been no conferences between the Forest Service and the Service regarding potential impacts of livestock grazing actions on the checkerspot.

Table 2. Forest Service allowable forage utilization guide by range condition and management strategy^a (excerpted from Forest Service, 1996: 94).

| Range Condition ^b | Continuous Season-long Use | Defer 1 Year in 2 | Defer 1 Year in 3 | Defer 2 Years in 2 | Rest 1 Year in 2 | Rest 1 Year in 3 | Rest 2 Years in 3 | Rest Over 2 Years in 3 |
|------------------------------|----------------------------|-------------------|-------------------|--------------------|------------------|------------------|-------------------|------------------------|
| Very Poor | 0 | 10% | 5% | 15% | 15% | 10% | 20% | 25% |
| Poor | 10% | 20% | 15% | 20% | 20% | 15% | 30% | 35% |
| Fair | 20% | 25% | 20% | 30% | 30% | 25% | 40% | 45% |
| Good | 30% | 35% | 35% | 35% | 35% | 35% | 45% | 50% |
| Excellent | 30% | 35% | 35% | 35% | 35% | 35% | 45% | 50% |

^a The Forest Service indicated that site-specific data may show that the numbers in the table are substantially high or low. The Forest Service developed these utilization guidelines to be conservative in order to assure protection in the event that site-specific data were not available (Forest Service, 1996: 94).

^b Range condition as evaluated and ranked by the Forest Service is a subjective expression of the status or health of the vegetation and soil relative to their combined potential to produce a sound and stable biotic community. Soundness and stability are evaluated relative to a standard that encompasses the composition, density, and vigor of the vegetation and physical characteristics of the soil (Forest Service, 1996: 94).

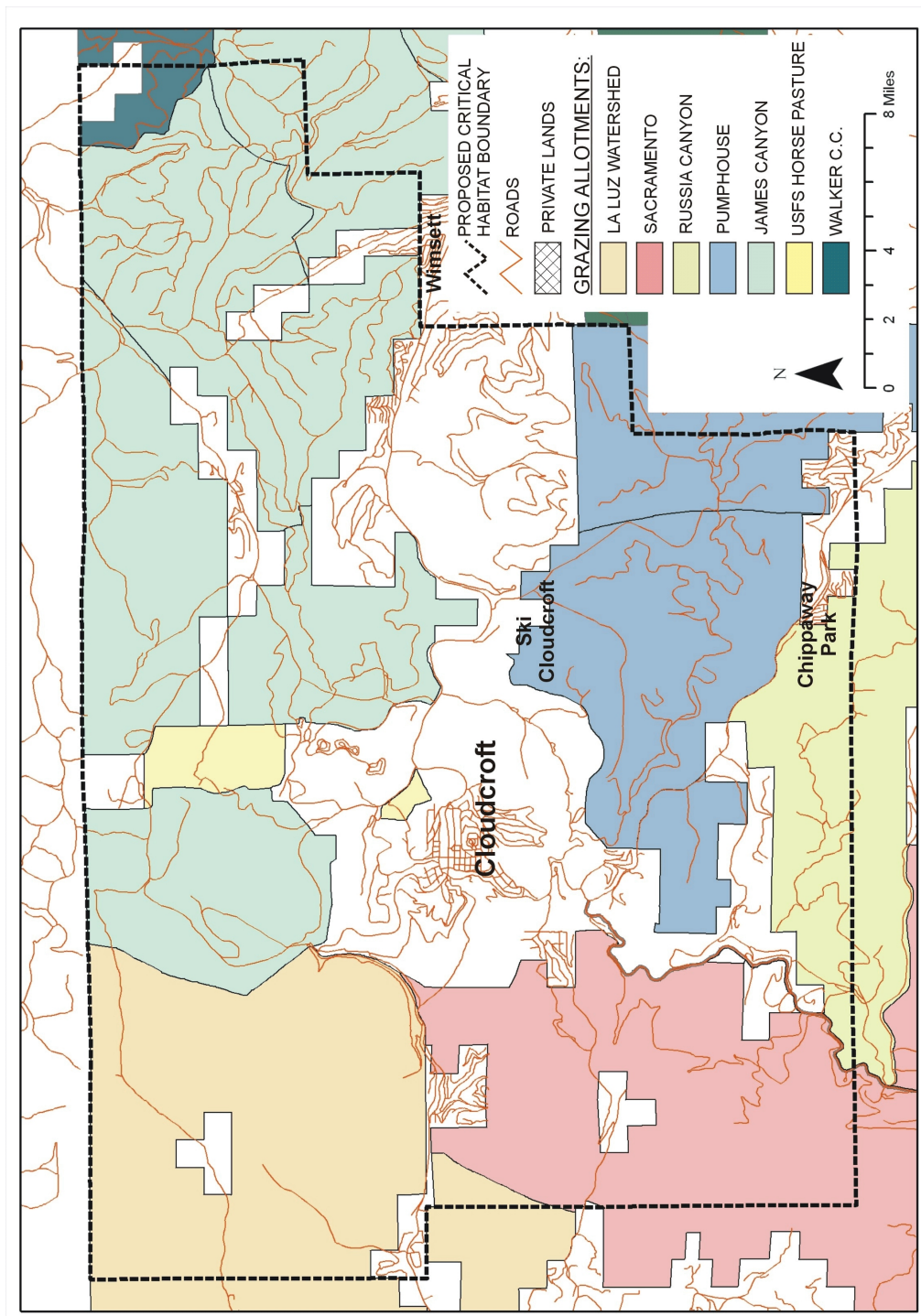


Figure 7.
Livestock grazing
allotments within
the proposed
critical habitat
boundary.

3.4.2 Effects on Livestock Grazing

3.4.2.1 No Action Alternative Listing of the Sacramento Mountains checkerspot butterfly as endangered without designation of critical habitat would require section 7 consultation on Forest Service grazing actions under the jeopardy standard of the ESA. The Pumphouse, James Canyon, and Russia Canyon allotments are likely to undergo formal consultation due to the potential for incidental take from livestock grazing in these areas. These formal consultations could conclude with either no changes to the proposed action or may include requirements for excluding livestock from certain areas, altering use periods or levels, rotation among pastures or allotment divisions, and creation of new pastures, exclosures, or allotment divisions. However, existing standards and guidelines for forage utilization and stubble height are likely to be adequate for protection of the checkerspot (Table 2; Forest Service, 1996: 94-95; E. Hein, Service, pers. comm., 28 June 2004).

The economic analysis concluded that listing of the checkerspot may result in a reduction of approximately 211 Animal Unit Months in the project area (Industrial Economics, Inc., 2004: 4-14). The estimated cost of lost grazing permit value from listing of the checkerspot was \$1,600 per year (Industrial Economics, Inc., 2004: 4-16).

3.4.2.2 Alternatives I and II Designation of critical habitat would trigger section 7 consultation on the effects of livestock grazing in unoccupied suitable habitat on Forest Service lands. Section 7 consultations would assess the effects of livestock grazing actions on proposed primary constituent elements. The impact of section 7 consultation under the adverse modification standard would vary, depending on

existing range conditions and landscape considerations. Low to moderate levels of grazing are likely to be compatible with conservation of the checkerspot (E. Hein, Service, pers. comm., 28 June 2004). Consultations under the adverse modification standard are likely to result in discretionary conservation recommendations in most cases. The probability for a grazing action proposed by the Forest Service to result in a determination of adverse modification or destruction of designated critical habitat is low.

3.5 Recreation

3.5.1 Existing Conditions

The area proposed as critical habitat includes an array of recreation opportunities. Private recreation operations or those operated by the Village of Cloudcroft within the area proposed for designation as critical habitat include two golf courses, a small downhill ski area (Ski Cloudcroft), two Recreational Vehicle (RV) parks, and Village parks and ball fields. Recreation facilities on Forest Service lands include trails for hiking, mountain biking, backpacking, and horseback riding; cross-country skiing; wildlife viewing, hunting, and fishing; eight developed campgrounds with more than 250 individual tent and RV camping sites, six group campgrounds with at least 50 sites to accommodate hundreds of individuals, and numerous dispersed camping areas (Figure 8; Lincoln National Forest, 2004a). The most heavily-used sites are the seven campgrounds with individual sites that provide water (Table 3). Developed campgrounds are managed for the Forest Service by a private concessionaire. Net revenue (after state taxes) from fees collected at seven developed campgrounds (Table 4) comprise

the majority of fees collected from all developed recreation sites on the district (Table 5).

Three annual recreation events are held on the Sacramento District each year : 1) an endurance motorcycle race; 2) the High Altitude Classic, a nine-mile, cross-country mountain bike race held in April or May; and 3) the Gary Johnson 10K Run-Walk. These events used to be held in checkerspot habitat but are being moved to the Upper Karr campground which avoids checkerspot habitat. Other dispersed uses such as outfitter-guide trips are for day uses (*e.g.* horseback rides, hunting) and do not entail overnight camps in checkerspot habitat (M. Stokes, Sacramento Ranger District, pers. comm., 21 April 2004).

Occupied checkerspot habitat occurs at several campgrounds on the Sacramento Ranger District. The Lincoln National Forest is currently undertaking voluntary measures to protect occupied checkerspot habitat as they design and implement renovations of recreation facilities. Deerhead, Slide, Black Bear, Sleepy Grass, and Aspen campgrounds are currently being planned for renovation. The new designs address conservation of the checkerspot by moving camp sites out of occupied habitat (J. Wilson, Lincoln National Forest, pers. comm., 13 April 2004).

Table 3. Total person visits and percent occupancy at seven developed campgrounds on the Sacramento Ranger District from 1999 to 2002 (Forest Service, 2004b). Percent occupancy is shown in the columns titled "Occup. Rate."

| Campground | 1999 | | 2000 | | 2001 | | 2002 | |
|-----------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|
| | Total Visits | Occup. Rate | Total Visits | Occup. Rate | Total Visits | Occup. Rate | Total Visits | Occup. Rate |
| Apache | 11,192 | 27% | 8,629 | 22% | 4,028 | 9% | 8,361 | 16% |
| Deerhead | 4,629 | 7% | 3,979 | 7% | 7,641 | 13% | 3,802 | 10% |
| Pines | 6,510 | 8% | 4,802 | 6% | 11,255 | 14% | 6,081 | 6% |
| Saddle | 7,094 | 26% | 5,334 | 21% | 2,989 | 11% | 6,753 | 24% |
| Silver | 11,564 | 22% | 7,800 | 16% | 6,009 | 11% | 10,242 | 22% |
| Silver Overflow | 1,778 | 3% | 4,632 | 9% | 2,306 | 4% | 3,823 | 7% |
| Sleepy Grass | 11,047 | 15% | 4,785 | 6% | 11,474 | 15% | 6,052 | 9% |

Table 4. Net revenue from seven developed campgrounds on the Sacramento Ranger District from 2000 to 2002 (Forest Service, 2004c).

| Campground | 2000 | 2001 | 2002 |
|-----------------|-----------------|-----------------|-----------------|
| Apache | \$12,405 | \$5,804 | \$11,981 |
| Deerhead | \$5,681 | \$13,830 | \$6,976 |
| Pines | \$6,980 | \$16,011 | \$8,244 |
| Saddle | \$7,496 | \$3,785 | \$9,844 |
| Silver | \$15,956 | \$8,945 | \$16,249 |
| Silver Overflow | \$10,678 | \$6,440 | \$11,329 |
| Sleepy Grass | \$6,609 | \$13,996 | \$9,406 |
| Total | \$67,805 | \$70,812 | \$76,031 |

Table 5. Net revenues from camping and related fees at all developed recreation sites on the Sacramento Ranger District, Lincoln National Forest (Forest Service, 2004c).

| Calendar Year | Net Revenue (after state taxes) |
|---------------|---------------------------------|
| 2000 | \$78,358 |
| 2001 | \$86,616 |
| 2002 | \$87,414 |

The Forest is also undertaking an assessment of off-road vehicle use, dispersed camping, and other dispersed recreation uses in occupied checkerspot habitat to assess potential effects on the species (D. Salas, Sacramento Ranger District, pers. comm., 21 April 2004).

There have been two conferences on potential impacts to the checkerspot from recreation-related projects. The Forest Service determined that the Fir Campground Capital Improvements Project may affect, but was not likely to adversely affect the checkerspot. The Service concurred with this determination (consultation number 2-22-02-I-128). The Forest Service avoided adverse effects to the butterfly by flagging locations of the butterfly prior to construction and avoiding those areas during construction of the project. Also, a boundary fence was proposed to reduce recreation and visitor impacts to proposed critical habitat in the project area.

The Pines Campground Capital Improvements Project underwent formal conferencing (consultation number 2-22-03-F-0061). This project involved reconstruction of the Pines Campground and included replacement and improvement of existing facilities as well as installation of a fence to protect occupied checkerspot habitat. The Service concluded that the proposed action would not result in jeopardy or adverse modification or destruction of proposed critical habitat. Incidental take of up to 10.5 acres of habitat occupied by the checkerspot was anticipated.

Two reasonable and prudent measures to minimize take of checkerspots and modification and loss of its habitat from the project were specified by the Service, with seven associated terms and conditions. These terms and conditions were for the Forest Service to:

- survey for life stages of the checkerspot in suitable habitat if the project was to be conducted during its active season (*i.e.* March through) and relocate any life stages found during the surveys to appropriate food plants adjacent to the site;
- ensure that a Contract Officer's Representative is designated, who would be responsible for overseeing compliance with the protective measures outlined in the terms and conditions;
- monitor the project to ensure compliance with applicable requirements and ensure that the project is implemented consistent with the terms and conditions and conservation measures;
- inform the campground host of the butterfly closure order, areas where camping is not allowed, and other relevant information prior to the annual opening of the campground;
- provide a report documenting how the project is in compliance with the reasonable and prudent measures and the terms and conditions;
- locate and clearly delineate staging areas in places that do not contain New Mexico penstemon, valerian, or orange sneezeweed, or any life stages of the checkerspot butterfly if the project is conducted during the active season of the checkerspot butterfly (*i.e.* March through October); and
- coordinate with the Service prior to implementing any maintenance or emergency repair actions in the campground that may affect the checkerspot.

Four discretionary conservation recommendations were also provided in the conference opinion. These recommendations were for the Forest Service to: 1) work cooperatively to develop a regional conservation strategy for the butterfly; 2) routinely monitor and report campground use; 3) determine whether ongoing grazing is affecting the checkerspot and initiate conferencing; and 4) provide an annual report to the Service on monitoring data and implementation of reasonable and prudent measures and terms and conditions specified in conference opinions.

3.5.2 Effects on Recreation

3.5.2.1 No Action Alternative Listing of the Sacramento Mountains checkerspot butterfly as endangered without designation of critical habitat would require section 7 consultation on Forest Service recreation actions under the jeopardy standard of the ESA. Past measures taken to minimize adverse effects and incidental take of the butterfly would likely continue under future section 7 consultations on recreation projects. For example, capital improvement projects at developed campgrounds that contain occupied checkerspot habitat would likely be required to avoid impacts, if possible (*e.g.* Fir Campground Capital Improvements Project) or minimize take by surveying for and relocating checkerspot individuals in proposed impact areas (*e.g.* Pines Campground Capital Improvements Project). Monitoring, reporting, and locating staging areas in unsuitable habitat would also likely continue to be required. Ongoing Forest Service actions to minimize recreation impacts on occupied checkerspot habitat would continue. Relocation of trail segments, off-road vehicle management, and moving recreation events to alternate locations may also result from section 7 consultations under the jeopardy standard.

3.5.2.2 Alternatives I and II Designation of critical habitat would trigger section 7 consultation on the effects of recreation projects in unoccupied suitable habitat on Forest Service lands. This would likely result only in specification of discretionary conservation recommendations, as an adverse modification determination on a recreation project is unlikely to occur. This is because no new, large-scale, high-impact recreation developments are planned in the proposed critical habitat boundary are none are likely to be proposed in the future.

3.6 Federal Land Transfers

3.6.1 Existing Conditions

Several exchanges or transfers of national forest land are currently in progress or proposed on the Sacramento Ranger District that would have an effect on checkerspot habitat (G. Garcia, Lincoln National Forest, pers. comm., 13 April 2004). Several of the actions involve the Forest Service acquiring checkerspot habitat for protection. These actions include the following.

- The Village of Cloudcroft purchase of 81 acres of forest adjacent to the village boundaries through Townsite Act. The decision notice approving this transfer was signed on 24 August 2004 (Lincoln National Forest, 2004d). Actual transfer of the land is expected in the fall of 2004.
- A proposal for the Forest Service to purchase private land in Lucas Canyon for the purpose of checkerspot conservation. Due to the time-consuming process required for the Forest Service to purchase land, the Lincoln National Forest is investigating the potential for a non-profit group to purchase the land while it is

available and sell it to Forest Service at a later date.

- There has been discussion of a three-way land exchange with Otero County Electric Cooperative and the Village of Cloudcroft. With this exchange, the Forest Service would acquire checkerspot habitat along U.S. Highway 82 currently owned by the Village. The Village would obtain Otero County Electric Cooperative land in Cloudcroft, and Otero County Electric Cooperative would receive national forest land adjacent to their substation along N.M. Highway 130.
- The Village of Cloudcroft proposed to purchase national forest land, on which their sewage treatment plant is now located, through the Townsite Act. Currently, the sewage plant is authorized under a Forest Service special use permit.

3.6.2 Effects on Federal Land Transfers

3.6.2.1 No Action Alternative Listing of the Sacramento Mountains checkerspot butterfly as endangered without designation of critical habitat would require section 7 consultation on Forest Service land-transfer actions under the jeopardy standard of the ESA. Effects on land transfer proposals that involve future development could include deletion of lands that contain occupied checkerspot habitat (e.g. the Townsite Act land transfer proposal). Land transfers developed for conservation of the checkerspot would not be affected by section 7 consultation under the jeopardy standard.

3.6.2.2 Alternatives I and II Designation of critical habitat would trigger section 7

consultation on the effects of land transfers on unoccupied suitable habitat for the checkerspot. An adverse modification determination could result if a proposal involves transfer of a large amount of suitable checkerspot habitat for development. However, such a land transfer proposal is very unlikely. Other land transfer proposals would not be affected by critical habitat designation, but section 7 consultation under the adverse modification standard may result in specification of discretionary conservation recommendations.

3.7 Socioeconomic Conditions and Environmental Justice

Regulations for implementing NEPA require analysis of social effects when they are interrelated with effects on the physical or natural environment (40 CFR §1508.14). Federal agencies are also required to "*identify and address disproportionately high and adverse human health or environmental effects*" of their programs and actions on minority populations and low-income populations, as directed by Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations).

3.7.1 Existing Conditions

3.7.1.1 Land Use The area proposed as critical habitat for the Sacramento Mountains checkerspot is a 34,560-acre area surrounding and including the Village of Cloudcroft in Otero County, New Mexico (Figure 5). Land use outside of the Village boundaries include residential subdivisions, private ranches, and national forest lands managed for multiple uses.

From 1990 through 2003, approximately 331 new homes have been constructed within the area proposed as critical habitat, including those within the Cloudcroft village limits (G. Estrada, Otero County, pers. comm., 16 July 2004). These new homes constitute a housing growth rate of approximately 21.5 percent in the project area from 1990 to 2003 (G. Estrada, Otero County, pers. comm., 2 September 2004). The Village of Cloudcroft has experienced about a 40 percent increase in new home permits issued during the same period. In 1990, six new home permits were issued, while in 2003, 10 residential construction permits were issued (J. Winkles, Village of Cloudcroft, Planning and Zoning, pers. comm., 25 June 2004). Permits for new commercial buildings in Cloudcroft have remained consistent over the ten-year period from 1990 to 2000 (*i.e.* one permit issued each year). The Sacramento Ranger District receives about one request per year for special use permits for right of ways that are located in checkerspot habitat (M. Stokes, Sacramento Ranger District, pers. comm., 21 April 2004).

3.7.1.2 Community Cloudcroft, located at an elevation of approximately 9,000 feet above mean sea level, is a small mountain community that has historic roots in tourism and natural resource extraction. Initial development and promotion of the village as a resort began more than one hundred years ago at the turn of the century. John Eddy, partner in the Alamogordo and Sacramento Mountain Railroad, is considered the "Father of Cloudcroft" (Rand, 2003). The railroad initially built a spur line from Alamogordo to Cloudcroft to reach timber needed for continuing the main branch of the railroad north from Alamogordo. In the process, Eddy realized the potential for developing a resort in the mountains, the first buildings of which became the what is now the Village of Cloudcroft (Rand, 2003). Eddy

eventually advocated banning logging on the Lincoln National Forest to protect the aesthetic values which directly contributed to tourism (Cloudcroft Chamber of Commerce, 2004).

Cloudcroft has a public library and two schools. The elementary (grades K through 5) and middle school (grades 6 through 8) share same building. There is also a high school for grades 9 through 12. School enrollment has been declining steadily over the past few years. For the school years ending in 2001, 2002, and 2003, the Cloudcroft school district enrolled 514, 482, and 452 students in all grades, respectively (New Mexico Public Education Department, 2004).

The village has had a volunteer emergency medical services unit since 1975. A volunteer fire department has been in service for at least 30 years. In the past 10 years, the fire department has increased its volunteer staff from 15 to 20. The Village is focusing on trying to get retirees to volunteer due to the limited number of households with at least one adult who is not employed full-time (J. Winkles, Village of Cloudcroft, Planning and Zoning, pers. comm., 25 June 2004). The nearest hospital is about 20 miles away in Alamogordo. Law enforcement protection is provided by the Otero County Sheriff's Office and New Mexico State Police.

Sacramento Mountains Senior Services has provided seniors in the area with various services for the past 18 years, including in-home meals, on-site meals at Cloudcroft and High Rolls, recreation activities, health and nutrition programs, respite care, a library, and computer and fax services. The center has experienced a 37 percent increase in the number of individuals receiving on-site meals and a 27 percent increase in the number of on-site meals served during the past five years. The number of off-site persons

and meals served increased 65 percent and 1,291 percent, respectively over the same five-year period. It is assumed that much of this increase is due to retirees moving to the Cloudcroft area (L. McClain, Sacramento Mountains Senior Services Program Coordinator, pers. comm., 25 June 2004).

The population of Cloudcroft was 749 at the time of the 2000 census. Between 1980 and 2000, the population of Cloudcroft grew by about 18 percent per decade (Table 6). The segment of the Cloudcroft population age 65 and over grew from 59 persons (9.2 percent of the total population) in 1990 (U.S. Census Bureau 2004a) to 115 persons (15.5 percent of the population) in 2000 (U.S. Census Bureau 2004b).

Education data for the population of Cloudcroft and Otero County are compared to that of New Mexico in Table 7. As shown in the table, the population of Cloudcroft is considerably more highly-educated than the populace of New Mexico or Otero County.

3.7.1.3 Environmental Justice The project area boundaries encompass portions of Otero County census tract 9, block groups 1, 2, and 3 (Figure 8). The Village of Cloudcroft is within block group 2. Social and cultural conditions in Cloudcroft and the surrounding unincorporated portions of Otero County that include the project area are relatively homogenous. The population is largely white and not of Hispanic origin (Table 8).

Table 6. Population change by decade in New Mexico, Otero County, and Cloudcroft, New Mexico from 1970 to 2000 (U.S. Census Bureau, 2004a and 2004b).

| Census Year | New Mexico | Otero County | Cloudcroft |
|----------------------------------|------------|--------------|------------|
| 1970 | 1,017,055 | 41,097 | 525 |
| 1980 | 1,303,302 | 44,665 | 521 |
| 1990 | 1,515,069 | 51,928 | 636 |
| 2000 | 1,829,146 | 60,747 | 749 |
| Percent change from 1970 to 1980 | 22.0% | 8.0% | -0.8% |
| Percent change from 1980 to 1990 | 14.0% | 14.0% | 18.1% |
| Percent change from 1990 to 2000 | 20.7% | 17.0% | 17.8% |

Table 7. Educational attainment for population age 25 or older in Cloudcroft, Otero County Census Tract 9, Otero County, and New Mexico (U.S. Census Bureau, 2004j).

| Education Level | New Mexico | Otero County | Census Tract 9 | Cloudcroft |
|--------------------------------|------------|--------------|----------------|------------|
| Less than high school graduate | 21.1% | 19.0% | 25.5% | 5.9% |
| High school graduate | 26.6% | 29.1% | 25.2% | 19.8% |
| Some college | 28.8% | 36.4% | 30.1% | 31.5% |
| College graduate | 23.5% | 15.5% | 15.2% | 42.8% |

Figure 8. Otero County census tract 9, block groups 1, 2, and 3. The proposed critical habitat area is shown by the green polygon at the top of the map.

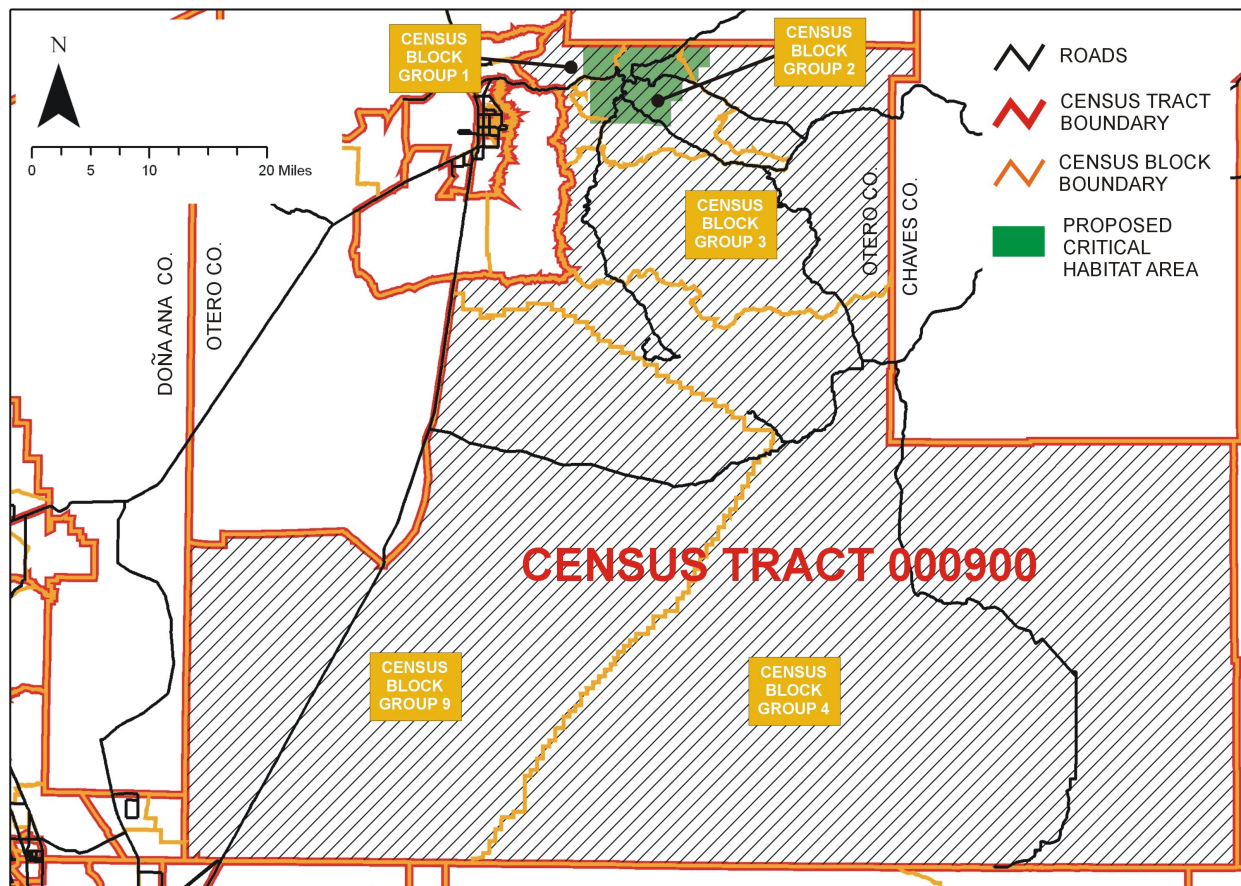


Table 8. Selected social demographic data for the state of New Mexico, Otero County, three census block groups that include the project area, and the Village of Cloudcroft. The area proposed as critical habitat for the Sacramento Mountains checkerspot is included within the boundaries of census tract 9, block groups 1, 2, and 3. Cloudcroft is within block group 2 (U.S. Census Bureau, 2004c, 2004d, 2004e, 2004f, 2004g)

| Social Demographic Factor | New Mexico | Otero County | Census Tract 9, Block Groups 1-3 | Village of Cloudcroft |
|---|------------|--------------|----------------------------------|-----------------------|
| Total population | 1,829,146 | 62,298 | 3,952 | 749 |
| Race (percent of total population) | | | | |
| white | 66.8% | 73.7% | 95.4% | 92.7% |
| black | 1.9% | 3.9% | 0.1% | 0% |
| American Indian | 9.5% | 5.8% | 0.6% | 0.8% |
| Asian | 1.1% | 1.2% | 0.4% | 0% |
| Hawaiian or Pacific Islander | 0.1% | 0.1% | 0.1% | 0% |
| some other race | 17.0% | 11.7% | 2.0% | 3.5% |
| two or more races | 3.6% | 3.6% | 1.5% | 2.5% |
| Hispanic origin (percent of total population) | | | | |
| Hispanic or Latino (of any race) | 42.1% | 32.2% | 9.8% | 15.5% |
| not of Hispanic origin | 57.9% | 67.8% | 90.2% | 84.5% |
| Education level (percent of population age 25+) | | | | |
| less than high school graduate | 21.2% | 19.0% | not available | 5.9% |
| high school graduate | 26.6% | 29.2% | not available | 19.8% |
| some college | 28.8% | 36.4% | not available | 31.5% |
| college degree(s) | 23.4% | 15.4% | not available | 42.8% |
| Age | | | | |
| median age (years) | 34.6 | 33.8 | 47.0 | 42.9 |
| 65 years and over (% of total pop.) | 11.7% | 11.7% | 17.9% | 15.4% |
| Income | | | | |
| per capita income (dollars) | \$17,261 | \$14,345 | not available | \$21,301 |
| persons below poverty level | 18.4% | 19.3% | not available | 9.9% |

3.7.1.4 Economy The area proposed as critical habitat for the checkerspot butterfly is largely rural with Cloudcroft being the only incorporated community within the project area. Like much of the western U.S., natural resource extraction activities were a large part of the local economy for European settlers in project area and surrounding region. However, Cloudcroft has also been marketed as a tourist destination for more than a century (Rand, 2003)

For the past 30 years, tourism-related businesses have been the largest industry in Cloudcroft and continue to grow and expand (J. Baldwin, Cloudcroft Chamber of Commerce, pers. comm., 24 June 2004). U.S. Census Bureau (2004*i*) data indicate that in 2000, natural resource-related industries employed only 2.4% of Cloudcroft's population and only 3.1% of the working population in all of Otero County (Table 9).

Table 9. Employed civilian population age 16 years and older by industry in Otero County and the Village of Cloudcroft, based on U.S. Census Bureau sampling data (U.S. Census Bureau, 2004*h*, 2004*i*).

| Industry | Otero County | | Cloudcroft | |
|---|------------------|------------------|------------------|------------------|
| | Number of People | Percent of Total | Number of People | Percent of Total |
| agriculture, forestry, fishing, hunting, mining | 682 | 3.1% | 8 | 2.4% |
| construction | 2,046 | 9.3% | 16 | 4.8% |
| manufacturing | 1,628 | 7.4% | 13 | 3.9% |
| wholesale trade | 259 | 1.2% | 0 | 0.0% |
| retail trade | 2,796 | 12.7% | 37 | 11.1% |
| transportation, warehousing, utilities | 1,214 | 5.5% | 20 | 6.0% |
| information | 245 | 1.1% | 3 | 0.9% |
| finance, insurance, real estate | 1,043 | 4.8% | 26 | 7.8% |
| professional, scientific, management | 1,426 | 6.5% | 6 | 1.8% |
| educational, health, social services | 4,410 | 20.1% | 106 | 31.7% |
| arts, entertainment, recreation, hospitality | 2,183 | 10.0% | 73 | 21.9% |
| other services | 1,314 | 6.0% | 13 | 3.9% |
| public administration | 2,688 | 12.3% | 13 | 3.9% |
| Total | 21,934 | 100% | 334 | 100% |

New Mexico Department of Labor (2004) data for the years 2001 to 2003 indicate an increase in employees in natural resource-related jobs in Otero County and Cloudcroft over the three-year period (Figure 9). During these same three years, employment in all industries declined overall for the same geographic areas. The average rate of increase in the number of natural-resource related jobs was 3.41 per quarter.

3.7.2 Effects on Socioeconomic Conditions and Environmental Justice

3.7.2.1 No Action Alternative Section 7 consultation under the jeopardy standard would be required on federal actions that have the potential to affect habitat occupied by the checkerspot. Actions on private lands that have the potential to result in take of the butterfly would be subject to section 10 of the ESA, which requires development of a Habitat Conservation Plan as part of an application to the Service for an incidental take permit.

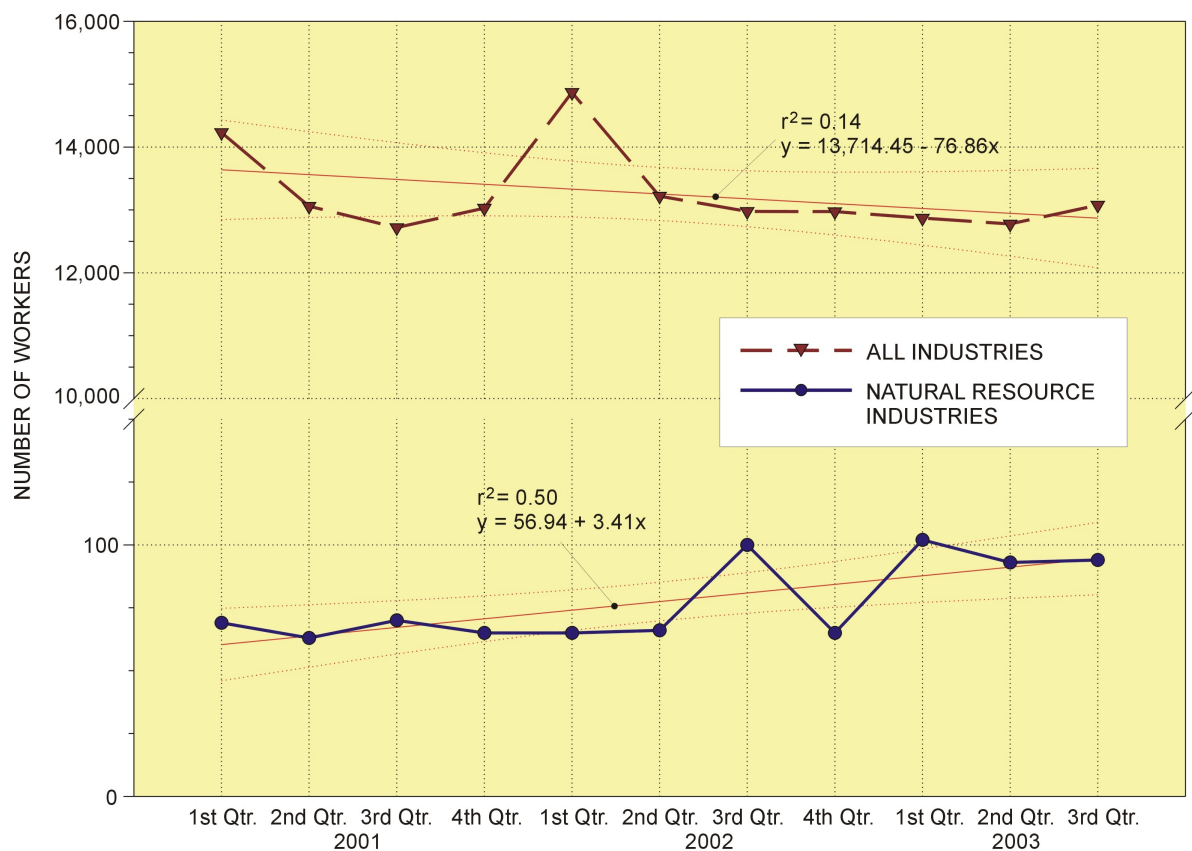
Conservation of the Sacramento Mountains checkerspot butterfly (including designation of critical habitat) would have an estimated annual economic impact of \$533,000 to \$816,000 (Industrial Economics, Inc., 2004: 4-24). Private entities would bear about 62 percent of these costs. Activities that would be most affected would include Otero County Electric Cooperative utility line and road maintenance projects, Natural Resources Conservation Service Environmental Quality Incentives Program projects on private lands, and private right-of-way road projects (Industrial Economics, Inc, 2004: 4-25). About 33 percent of the estimated costs of checkerspot conservation are expected to occur on private lands. These costs would be from consultations

on Natural Resources Conservation Service projects on private lands and butterfly survey and Habitat Conservation Plan work related to residential and commercial developments (Industrial Economics, Inc., 2004: 4-26).

3.7.2.2 Alternatives I and II Designation of critical habitat would be likely to have an economic impact that would arise from additional administrative requirements to address critical habitat during section 7 consultations. The economic impact resulting solely from designation of critical habitat was not identified in the economic analysis (Industrial Economics, Inc., 2004). Designation of critical habitat would have an effect on private lands when a federal action is involved. Critical habitat designation may also result in some additional considerations or recommendations during Habitat Conservation Plan development for actions on private lands that involve incidental take of the checkerspot.

Social conditions related to use of the land are unlikely to change with critical habitat designation, as compared to the existing condition. Designation of critical habitat under either alternative would not have any effect on the following social concerns: community disruption or disintegration, land use patterns, lifestyles, social interactions, family ties, kinship patterns, displacement or relocation of businesses, the ability to provide and deliver social services, public health, public safety, displacement of community facilities, public vehicular access, public pedestrian access, or community tax base.

Figure 9. Trends in natural-resource related jobs and total jobs from 2001 through 2003 (New Mexico Department of Labor, 2004). Best-fit regression lines and 95 percent confidence intervals are indicated for each data set.



Designation of critical habitat under either of the action alternatives, but particularly with Alternative I, would be perceived by many residents of the project area as having a detrimental impact on the ability to control their own land. Many residents may also view critical habitat designation as a threat to their freedom to do what they want with their own land. Others may view it as a means for the federal government to gain control over their lives. However, random interviews with several local residents concluded that these perceptions are not borne out in reality.

3.8 Cumulative Effects

Cumulative effects are the effects from other projects that are not part of this proposed action, which may have an additive effect when combined with the effects expected from the proposed action. The geographic extent for which cumulative effects are considered vary for each resource. The past, present, and reasonably foreseeable future actions in the proposed critical habitat analysis area that, combined with the proposed action, could contribute to cumulative effects include:

- effects of listing, critical habitat designation, and section 7 consultations for other species and other designated critical habitats; and
- existing land management policies and plans.

Effects of proposed critical habitat designation on most resource areas are generally similar under each of the action alternatives, and vary only in terms of potential area of effect. These effects consist primarily of the potential for minor changes to projects resulting from implementation of discretionary conservation recommendations. These potential impacts are not likely to result in

any cumulative effects, when added to the effects of existing section 7 consultations for other species and existing land management plans and policies.

3.9 Relationship Between Short-Term and Long-Term Productivity

Proposed designation of critical habitat is a programmatic policy that would have no effect on short-term or long-term productivity.

3.10 Irreversible and Irretrievable Commitment of Resources

Irreversible commitments of resources are those effects that cannot be reversed. For example, the extinction of a species is an irreversible commitment. Irretrievable commitments of resources are those that are lost for a period of time, but may be reversed, such as building a shopping center on farmland. The land cannot be used for farming again until the pavement is removed and soils are restored to productivity. Designation of critical habitat for Sacramento Mountains checkerspot butterfly would result neither in irreversible or irretrievable commitments of resources.

4.0 COUNCIL ON ENVIRONMENTAL QUALITY ANALYSIS OF SIGNIFICANCE

Pursuant to the Council on Environmental Quality regulations for implementing NEPA, preparation of an environmental impact statement is required if an action is determined to significantly affect the quality of the human environment (40 CFR 1502.3). Significance is determined by analyzing the context and intensity of a proposed action (40 CFR 1508.27).

Context refers to the setting of the proposed action and includes consideration of the affected region, affected interests, and locality (40 CFR 1508.27[a]). The context of both short- and long-term effects of proposed designation of critical habitat is the 54 square mile analysis area centered around Cloudcroft, Otero County, New Mexico. The effects of proposed critical habitat designation at this scale, although long-term, would be small.

Intensity refers to the severity of an impact and is evaluated by considering ten factors (40 CFR 1508.27[b]). The intensity of potential impacts that may result from proposed designation of critical habitat for Sacramento Mountains checkerspot butterfly is low.

- The potential impacts may be both beneficial and adverse, but minor.
- There would be no effects to public health or safety from proposed designation of critical habitat, and the proposed action would not affect unique characteristics of the geographic area.

- Potential impacts from critical habitat designation on the quality of the environment are unlikely to be highly controversial and do not involve any uncertain, unique, or unknown risks.
- Proposed designation of critical habitat for Sacramento Mountains checkerspot butterfly does not set a precedent for future actions with significant effects and would not result in significant cumulative impacts.
- Significant cultural, historical, or scientific resources are not likely be affected by proposed designation of critical habitat.
- Proposed critical habitat designation would have a beneficial effect on Sacramento Mountains checkerspot butterfly.
- Proposed critical habitat designation would not violate any federal, state, or local laws or requirements imposed for the protection of the environment.

5.0 PREPARERS OF THE EA

This EA was prepared by Blue Earth Ecological Consultants, Inc., under contract to the U.S. Fish and Wildlife Service, Region 2. The economic impact analysis referenced in the EA was prepared by Industrial Economics, Inc.

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